Collateral Adjectives in English and Related Issues

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To Kiyomi, Kana, and Mio

Declaration

I hereby declare that this thesis has been composed by myself and that it contains no material submitted previously for any other degree or professional qualification except as specified.

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Abstract

This thesis constitutes an example of a meaning-based approach to English morphology. Its central aim is to study various topics related to *collateral adjectives* (CAs), such as *paternal* (base noun (BN): *father*), *vernal* (BN: *spring*), *canine* (BN: *dog*) etc.

In Chapter 1, the notion of CAs is introduced, defined as 'Latinate suppletive relational adjectives (RAdjs)'. The specific properties of CAs in the more general context of RAdjs are discussed.

In Chapter 2, it is shown that the existence of CAs poses serious problems to form-based approaches to morphology in general because, in spite of their apparent derivational status, they provide us with extreme cases where CAs and base nouns are formally unconnected. However, they all share a constant semantic relationship with their BNs; therefore, it is argued that there is a certain meaning-based paradigmaticity observable between CAs and BNs, based on which derivational suppletion can be defined between them.

Chapter 3 deals with the syntax and semantics of RAdjs, of which CAs constitute a proper subset. Through comparing CAs with attributive nouns, possessives, etc., it is concluded that RAdjs have weak, type-indicating referentiality, in spite of their adjectival morphology, which causes them to display many 'nounlike' characteristics. In this chapter, it is also shown that the decompositional lexical-semantic analysis successfully accounts for the attribution and that RAdjs easily undergo semantic shift to become qualitative adjectives.

Chapter 4 discusses the lexicographical treatment of CAs. Firstly, through surveys of various dictionaries past and present, it is shown that the treatment of semasiological dictionaries is insufficient, whereas onomasiological dictionaries tend to contain too much information on CAs. It is concluded that upper-level semasiological dictionaries should contain onomasiological information concerning CAs and that the best way is to treat them in the microstructures of their BNs, preferably with some appropriate cross-referencing.

Chapter 5 presents sociolinguistic and contrastive studies of CAs. It is shown that CAs belong to the Latinate vocabulary in English, which means that they constitute the 'language bar' in the English-speaking world. In a contrastive analysis of Japanese and English, I conclude that in Japanese, special character-based pseudo-paradigmaticity (as defined above) is prevalent—at substantial cost to education but resulting in high literacy. In English, on the other hand, in the absence of a mediating writing system, knowledge of CAs is not acquired automatically with literacy and hence has come to matter in sociolinguistic terms.

Chapter 6 summarises the discussion and states the outcome of the research reported in the thesis.

Contents

List of Abbreviations

A	adjective
AmE	American English
AP	adjective phrase
Adj, adj	adjective
Attrib.	attributive
Aux	auxiliary verb
BN	base noun
CA	collateral adjective
def.	definition
Det	determiner
DP	determiner phrase
GVS	Great Vowel Shift
IEPS	inferable eventual position or state
IND	indicative
INF	infinitive
LP/M	Lexical Phonology/Morphology
ME	Middle English
ModE	Modern English
MPR	morphonological rule
MR	morphological rule
N	noun, referentiability (only in J. M. Anderson's framework)
N1	prenominal noun modifier in noun + noun combinations
N2	nominal head in noun + noun combinations
NLC	Noun Licensing Condition
NP	noun phrase
NSR	narrow-scope reading
OE	Old English

P	preposition, predicability (only in J. M. Anderson's framework)
PDE	present-day English
PL	plural
POSS	possessive
PP	prepositional phrase
PR	phonological rule
Pred	predicative
PRES	present
PST	past form
QAdj	qualitative adjective
R	referentiality
R-index	referential index
RAdj	relational adjective
SG	singular
Suf.	suffix
V	verb
WSR	wide-scope reading

Abbreviated dictionary names are listed in **References**.

Chapter 1
Introduction

1.1. Aims

This thesis is devoted to the study of *collateral adjectives* (CAs) in English. The term CA is used to denote 'Latinate[1] suppletive relational adjective'. The following list shows some examples of CAs preceded by their corresponding semantically related base nouns (BNs):

(1.1) [2] spring — vernal
summer — aestival
fall (AmE) — autumnal
winter — hibernal
cat — feline
dog — canine
bear — ursine
horse — equine
cow — bovine
wolf — lupine
arm — brachial
heart — cardiac
mouth — oral
nose — nasal, rhinal
iron — ferric
ice — gelid, glacial
father — paternal
mother — maternal
day — diurnal
night — nocturnal
ship — naval
church — ecclesiastical, ecclesial
lake — lacustrine
forest — sylvan

To the best of my knowledge, the first time this term appeared in the linguistic literature can be traced back to the 1950s, when the dictionaries published by Funk and Wagnalls use the term to list this group of adjectives in English under the entries of their BNs.

Later, Pyles and Algeo (1970: 129) refer to the above adjectives as CAs. Thomas Pyles is one of the editors of the dictionaries published by Funk and Wagnalls and is assumed to be the inventor of the term. According

[1] As we shall see in 2.1, the term 'Latinate' in the present thesis covers not only the daughter languages of Latin but also Greek.
[2] These examples are taken from ORD1.

to them, CAs are '[adjectives which] are closely related in meaning but quite different in form from their corresponding nouns, like *equine* and *horse*, [...]'. So far as the linguistic literature is concerned, it seems that this terminology is strictly theirs, and there has not been any other literature on word formation referring to it since then. In their definition, 'collateral' in CA means '[d]escended from the same stock, but in a different line; pertaining to those so descended. Opposed to *lineal*.' (OED **collateral** *adj.* 4.)

There are many interesting problems these CAs pose to various fields of linguistic theory. Even the most superficial examination of them reveals that they are far from ordinary words which are of daily use. The average native speaker of English might not have any idea what *brachial*, *ferric*, or *sylvan* means, for example. One possible explanation for this situation is that CAs belong to the Latinate vocabulary. If so, what aspects of Latinate vocabulary make them 'hard words' as Leisi (1974: 55) refers to them?

Interestingly enough, some of them have synonyms which are of native origin. For example, the word *father* has *fatherly* as well as *paternal* as its corresponding adjectival form. Note that we all say that *fatherly* is an adjective (morphologically) derived from its BN, *father*. Why does not the same line of argument apply to *paternal* so that we analyse *paternal* as a morphological derivative from *father*? This seems to me all the more mysterious because in inflection, word forms which cannot be completely related to others are often analysed as 'suppletive' word forms, as is witnessed by such examples as *went* ('suppletive' past form of the lexeme GO[3]); *better* and *best* ('suppletive' comparative and superlative forms of the lexeme WELL and GOOD); various word forms of lexeme BE; etc. in English.

Such formal unconnectability of CAs to their BNs strongly suggests that

[3] Uppercase letters are used to denote lexemes.

if CAs are to be connected to their BNs, some kind of semantic consideration is essential. This leads to the importance of semantics in morphology and lexicology in general, just as Dalton-Puffer (1997) observes.

Another interesting problem CAs pose is their relevance to the syntax and semantics. As we shall see in Chapter 3, CAs display peculiar syntactic and semantic properties, which enables us to categorise them as a subset of relational adjectives (RAdjs) in the adjectival category. RAdjs are known to have 'nounlike' characteristics. In Chapter 3, we shall ascribe such 'nounlike' characteristics to the special referentiality of RAdjs. In this chapter, we shall also see the lexical-semantic analysis of RAdj + noun combinations and the often-observed semantic shift RAdjs undergo.

As we have seen above, Latinateness and suppletiveness are crucial to the notion of CA, but we must note that they pose interesting problems to the field of lexicography as well. Usually, dictionaries are known to provide us with definitions of words. However, they should also present users with various pieces of information concerning words and expressions of a language. Thus, this leads to the question of how CAs are presented in the dictionary. Also importantly, we would like to present CAs without impairing their relationship with their BNs. It would be a significant contribution to lexicography if we could successfully provide dictionaries with a method to treat CAs. Since dictionaries obey the alphabetical principle and their treatment of entries is overwhelmingly semasiological—i.e. from form to meaning, here again, we have to face the problem of how to treat them from the semantic point of view.

English is known to have more than one lexical stratum in its lexis and CAs belong to the Latinate stratum; thus, research on CAs leads to the research on the Latinate lexical stratum of English in general. This has tremendous implications in contrastive linguistics and linguistic typology.

For example, if there is a language which has similar lexical structures, contrastive studies between English and such a language will provide interesting insights for studies of both languages.

The above discussions clearly suggest that CAs provide us with good food for thought. The reason can be ascribed to the fact that they are relevant to various aspects of language. In what follows, we shall see their relevance to language studies in more detail, following the order of the presentation in this thesis.

1.2. The Relevance of Collateral Adjectives to Language Studies and the Structure of the Present Thesis

In this section, we shall see CAs' relevance to language studies with special reference to the order of the presentation in the present thesis. As we have seen in 1.1, CAs are defined as 'Latinate suppletive RAdjs'. This means that CAs have the following three different aspects at least: (a) being 'suppletive', (b) being RAdjs, and (c) being Latinate. My presentation in the present thesis roughly corresponds to these three aspects.

First, we shall consider (a) above; namely, CAs' relevance to English morphology and morphological theory in general. If we admit the notion of suppletion in derivational morphology, we have to put its definition on a firm footing. Thus, Chapter 2 of my thesis is devoted to morphological studies on CAs and meaning-driven approach to morphology and lexicology in general.

Then, in Chapter 3, we shall discuss (b). As their definition shows, CAs constitute a proper subset of RAdjs which have their own peculiar syntactic and semantic properties.

Next, we shall make an excursus into the field of lexicography in Chapter 4. The main topics in this chapter are about lexicographical descriptions

of CAs. We shall start by analysing their lexicographical treatments and then, a certain way to treat them is proposed.

In Chapter 5, we would like to discuss various problems related to (c) above. As is well known, Latinateness means sociolinguistic prestigiousness in the English lexis, which means that some sort of sociolinguistic analysis is possible for CAs. The Latinate stratum of the English Lexis is relatively well studied, as is witnessed by Ayers (1986), Denning and Leben (1995), Dalton-Puffer (1996), Stockwell and Minkova (2001), among others; thus, here we shall take a relatively well-trodden path to this lexical stratum. Also importantly, there are other languages in the world that have similar lexical strata, which opens possibilities for contrastive linguistic studies. In this thesis, Japanese is taken up for this purpose.

Finally, Chapter 6 summarises the discussions and concludes the present thesis. We shall see each chapter in more detail below.

1.2.1. Collateral Adjectives and Their Relevance to Morphology: the Notion of Suppletion

The discussions in Chapter 2 revolve around the notion of suppletion. One of the most important problems is how it is possible to ensure the 'derivational relationships' between CAs and their BNs. We shall start discussion by reviewing such fundamental notions as the morpheme, morphological derivation, paradigm, suppletion, inflection and derivation, among others. Through this discussion, it is shown that the classical notion of the morpheme is seriously flawed in analysing morphosemantic relationships involving extreme allomorphy (2.2).

These discussions draw us into reviewing the notion of suppletion in morphology. Various views on the notion are surveyed and reviewed including the European tradition of lexicography, onomasiological approaches, component analysis developed in America, recent approaches

to suppletion based on Natural Morphology (2.3). After that, we shall consider the morphosemantic transparency of CAs in detail with special reference to the analysis of Stephen Ullmann's (1957, 1962) (2.4). Here, It is that even in Saussure's times, the robust studies of the notion of the morpheme presuppose meaning-based approaches as well as form-based approaches. Then, Leisi's (1974) lexicology is reviewed as a preliminary step for introducing my own paradigm-based approach to be shown in 2.5. Such important notions as dissociation, consociation, and bisociation are also considered in this section.

In 2.5, my own paradigm-based analysis of CAs is presented. It is clearly shown that this kind of meaning-driven approach is indispensable in accommodating CAs into English morphology. The final section 2.6 is about the morphological status of CAs in English. Note that, by definition, they belong to the so-called 'Neo-Latin' (Marchand, 1969: 7) basis of word formation. Therefore, we shall discuss the significance of Latinate vocabulary in general in English morphology. Note that not only synchrony but also diachrony is considered. Also considered are their implications for the stratal views of English morphology such as Lexical Phonology/Morphology.

1.2.2. Collateral Adjectives and Their Relevance to Syntax and Semantics: Revolving Around the Notion of the Relational Adjective

In Chapter 3, we shall consider the syntax and semantics of CAs. As their definition shows, CAs constitute a proper subset of RAdjs, which means that apart from their Latinateness and suppletiveness all CAs belong to the set of RAdjs. Therefore, we shall treat the syntax and semantics of RAdjs in this chapter, 'upgrading' the topic, as it were. The examples of CAs and non-CA RAdjs with their corresponding BNs are shown in (1.2):

(1.2) a. CAs with their corresponding BNs:
vernal (~ spring); aestival (~ summer); feline (~ cat); canine (~ dog);

oral (~ mouth); nasal, rhinal (~ nose); bovine (~ cow); diurnal (~ day); naval (~ ship); sylvan (~ forest); etc.

b. Non-CA RAdj with their corresponding BNs:
autumnal (~ autumn); departmental (~ departmental), microscopic (~ microscope), nervous (~ nerve), musical (~ music), adjectival (~ adjective), presidential (~ president), etc.

In this chapter, first of all, we shall discuss RAdjs' syntactic aspects. RAdjs have often been analysed as allegedly 'nounlike' adjectives. Thus, we start our discussions by reviewing the notion of the adjective in detail (3.2.1). Especially important is the question: what is it that differentiates adjectives from nouns? Such criteria for adjectivehood as semantic generality, gradability, and predictability are considered, before it is concluded that adjectives are composed of various different subtypes. This leads to the discussions of adjectival taxonomy (3.2.1.2). Through these discussions, it is shown that apart from identifying and intensifying adjectives, adjectives are largely divided into two types: namely, (a) qualitative adjectives (QAdjs), and (b) relational adjectives (RAdjs). Then, after characterising attribution as having classifying function in 3.2.2.2, and the notion of attribution is considered in comparison with ascriptiveness in 3.2.2.3 and 3.2.2.4, we shall start to focus our discussions of attributive-only adjectives.

Through discussion the taxonomy of attributive-only adjectives (3.2.3), we shall make an excursus on the structural analysis of attribution in general in 3.2.4. There, it is shown that the 'bare phrase structure' analysis captures nicely the often pointed-out 'noncompositional' (Lahav, 1989) nature of attribution.

Next, in 3.2.5, we shall focus on the nature of RAdjs. After reviewing such theories of syntactic categories as J. M. Anderson (1997) and Baker (2003), it is shown in 3.2.5.3 that RAdjs all have weak, type-indicating referentiality. In 3.2.5.4, other modifiers such as N1s, POSSs, and PPs

are compared with CAs in terms of strength of referentiality.

The second part of this chapter is devoted to semantic studies on RAdjs. After reviewing such studies as Bolinger (1967), Ljung (1970), Levi (1978), Warren (1984, 1988), and Beard (1991), it is shown that some sort of lexical decompositional analysis is crucial in understanding adjectival modification. This is because in the attributive structure, adjectives can actually see 'inside' the modified head noun for some decompositional semantic feature for them to be combined with. Following the lead of Beard (1991), the crucial difference between the RAdj and the QAdj in attribution is that the former behaves like an argument whereas the latter behaves like a function in lexical semantic framework (3.3.1.4). In addition, it is shown that such a decompositional analysis also successfully explains the difference between so-called the wide-scope readings (WSRs) and the narrow scope readings (NSRs) of such expressions as *an old friend.*

In 3.3.2, we shall see the lexical-semantic analysis of the so-called bracketing paradox phenomena of the type illustrated by *baroque flautist.* How the Beardian lexical-semantic approach plus the present analysis of RAdjs treats such nominal expressions as *baroque flautist, nuclear physicist,* etc. is presented there.

Finally, in 3.3.3, we shall see how RAdjs undergo semantic shift to become QAdjs, as well as what implications such semantic shift has in the lexis of English.

1.2.3. Collateral Adjectives and Their Relevance to Lexicography

In Chapter 4, we shall make an excursus into the field of lexicography. The word 'excursus' is used here in the sense that the chapter deals with lexicographical treatments of CAs rather than CAs themselves. However, the discussions given in this chapter and their implications turn out to be of great importance to the study of CAs.

We have seen that the most serious problem in dealing with CAs is ascribed to their formal unconnectability to their BNs. In the case of semasiological lexicography, this 'unconnectedness problem' can be all the more serious because semasiological dictionaries obey the alphabetical principle and thus present only 'an atomistic view of the vocabulary, treating each word in isolation, the headword with its entry, and making few of the connections that exist between words.' (Jackson, 2002: 146). Therefore, for a fuller treatment of CAs, some measures have to be taken to establish the lost connectedness between CAs and their BNs. (4.1.)

Onomasiological dictionaries such as thesauri, on the other hand, have to face the so-called 'word-finding problems'. Indeed, their problems revolve around the possibility of enhancing their access structures, or improving their selection scope of CAs, which are completely different in kind from the problems semasiological dictionaries face (4.3.2).

In 4.4, we shall conduct surveys of CAs' lexicographical treatment in various semasiological and onomasiological dictionaries. After recognising certain trends in the current lexicographical treatment, we then proceed to make a proposal on what kinds of measures should be taken for the fuller treatment of CAs (4.5).

1.2.4. Collateral Adjectives and Their Relevance to Sociolinguistics and Contrastive Linguistics

Chapter 5 focuses on the Latinate aspects of CAs. Since Latinateness leads to sociolinguistic prestigiousness in the lexis of English, acquiring CAs counts a lot in the English-speaking world. This is easily attested by the existence of the large number of reference books, thesauri, etc. as well as word games and crossword puzzles (5.2).

In 5.3, we shall conduct contrastive studies on the lexis of English and that of Japanese, which is likewise known to have more than one lexical

stratum. It is shown that the Japanese lexis is similarly composed of more than one lexical stratum and that one of its strata, the Sino-Japanese stratum, corresponds to the Latinate stratum in English. Various similarities and differences between the two languages are discussed, through which it is concluded that in the case of Japanese, it is grapheme-based paradigmaticity which connects Sino-Japanese readings and native readings; whereas in the case of English meaning-based pseudo-paradigmaticity connects CAs and BNs (5.3). It is concluded that the knowledge of this particular paradigmaticity undergoes a special sociolinguistic interpretation and functions as a 'language bar' (Grove, 1949; Corson, 1985) in the English-speaking world.

Chapter 2
Collateral Adjectives and English Morphology

2.1. Introduction

The aim of this chapter is to consider how we should analyse CAs in terms of morphology. We shall start by checking some of the basic terminology and notions of morphology in 2.2. Among the terms and notions to be discussed in this chapter are these: the morpheme, morphological derivation, paradigm, suppletion, and the division between inflectional and derivational morphology. Through this process, it is clarified that a meaning-based approach to morphology should be appropriately adopted if CAs are to be appropriately treated in English morphology.

In 2.3, we shall consider the notion of suppletion in morphology. First, an extensive review is made on the previous studies about suppletion. The review is divided into three parts: (A) studies in America before the 1970s, (B) studies in Europe before the 1970s, and (C) studies since the 1970s. In the last part, we shall see two important lines of approach to the notion of suppletion developed recently; namely, Natural Morphology and paradigm-based approach to morphology.

In 2.4, we shall see the problem of morphosemantic transparency and opaqueness in detail. As one of the first scholars who paid attention to CAs, Ullmann's work is reviewed there with special reference to the Saussurean dichotomy of motivatedness.

My own version of paradigm-based analysis of CAs is presented in 2.5. I base my analysis on the Paradigmaticity Hierarchy founded on Cruse's (1986) notion of 'proportional series'. It is shown that several different degrees and kinds of paradigmaticity are observed in this hierarchy and in the case of CAs, pseudo-paradigmaticity observed between relational adjectives (RAdjs) and their base nouns (BNs) functions as a base for the suppletive relations between CAs and their BNs.

Section 2.6 is about the morphological status of CAs in English. Note that as its definition shows, CAs belong to the so-called 'Neo-Latin' (Marchand, 1969: 6-8) basis of word formation. This means that we will discuss the significance of Latinate vocabulary in general in this section. Note that not only synchronic but also diachronic aspects are considered. Also considered in this section are their implications to the stratal views of English morphology such as Lexical Phonology/Morphology.

Finally, 2.7 summarises the whole discussions of this chapter.

A few words of caution are in order concerning the terms 'Latinate' and 'BN' in the present thesis. Firstly, as to the term 'Latinate', we should bear in mind that it covers not only Latin but also any of the daughter languages of Latin, as Harley (2006: 165) and Denning and Leben (1995: 23) point out. Moreover, I would like to use the term to include the Greek language also in the present thesis.[4] The reason for this inclusion is that, as is observed by Marchand (1969: 7) and Lenski (2000: 1), the so-called 'Neo-Latin' (Marchand, 1969: 6-8) vocabulary contains many Greek elements as is exemplified by such examples as *bio-log-ic-al* and *philo-soph-ic-al*.[5] Also, note that Greek elements sometimes attach to other elements derived from Latin, as is witnessed by *hyper-sens-it-ive*, *hyper-act-ive*, etc.

Secondly, as to the term BN, it should be noted that the relationship between CAs and their BNs is not at all transparent from the formal point of view. Thus, the term 'base' does not presuppose formal morphological transparency of any kind. On the contrary, what is

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[4] Corson (1985) uses the term *Graeco-Latin vocabulary* to avoid unnecessary terminological confusions. However, in favour of terminological simplicity, I would like to use the term 'Latinate' all through my thesis.

[5] Note that this terminological convention is generally taken for granted in the literature on the so-called 'Latinate Constraint' in morphology. Scholars tend to apply the feature [+Latinate] to Greek elements as well as 'purely Latinate' elements. The Latinate Constraint prohibits the combinations of stems and affixes whose etymological features are not compatible. See Plag (1999: 57ff.), Rakić (2007) for a further discussion of this constraint.

involved between them is a recurrent semantic relationship captured by the constant semantics of the type, 'of, or pertaining to X' (where X is the BN). Actually, this leads to the suppletive nature of CAs.

2.2. On the Basic Notions and Terminology of Morphology

In this section, we shall make a review on such notions as the morpheme, derivation, paradigm, and suppletion. Since many terms and notions are intricately related to each other, such topics as the differences between inflection and derivation, Saussurean semiotics, and American and European structuralism are also covered in passing. After that, the possibility of introducing a meaning-based approach to morphology is considered.

2.2.1. The Notion of the Morpheme

One of the important principles of morphology is that the word is composed of *morphemes* which can be informally defined as 'the smallest meaning-bearing unit of language' (Bauer, 1988: 247). Textbook treatments of English morphology usually start with examples of morphological decomposition of words into constituent morphemes; hence, we all know that, for example, the word *antidisestablishmentarianism* can be morphologically analysed as composed of six morphemes, *anti-*, *dis-*, *establish*, *-ment*, *-arian*, and *-ism*.[6]

In the period of structural linguistics, Bloomfield (1935: 161) defines the morpheme as 'a linguistic form which bears no partial phonetic-semantic resemblance to any other form' and this definition seems still influential in our times as well. Therefore, the above morphological analysis can be likened to a 'building' (i.e. a word) composed of 'blocks' (i.e. morphemes). S. R. Anderson refers to this 'building-block-like' notion of the morpheme as 'classical morpheme' (S. R. Anderson 1988: 151; 1992: 48) and points out that '[t]he thrust of this definition is the requirement that phonetic

[6] Some people regard *-arian* as composed of *-ary* and *-an*. To them, this word is composed of seven morphemes.

and semantic resemblances be correlated' (1992: 49).

Though this building-block-like notion of the morpheme works well with the above example, there are some cases in which such an analysis does not work at all. See the following examples where the meaning 'more than one' (plural) is expressed by phonetic realisations different from simple suffixation of /s ~ z ~ əz/:

(2.1) mice ('more than one mouse'), geese ('more than one goose'), children ('more than one child'), octopi ('more than one octopus')

In the above examples, the meaning 'more than one' is expressed by way of ablaut (vowel mutation) and/or *en*-suffixation, or *i*-suffixation, rather than simple *s*-suffixation. Clearly, what is at issue here is that the building-block-like notion of the morpheme does not apply to these examples. It is obvious that the above-mentioned correlation requirement of the morpheme does not hold.

Therefore, according to Bauer (1988: 17), many American sources adopt the term morpheme to solely mean the smaller classes whose members share both a common meaning and a common phonetic form. A paradigm example is the above regular plural morpheme /s ~ z ~ əz/ as in *books*, *shoes*, and *offices*. On the other hand, in the British tradition, the notion of morpheme often means larger semantic classes whose phonetic basis is only partial. Thus, the class of all plural nouns has the morpheme 'Plural' in common.

It has often been pointed out that in the United States, the view is dominant to see the morpheme as a 'thing', or a sign. Though Bloomfield uses only the term 'alternant' rather than 'morpheme' in his analysis of English plural forms, he seems to admit at least the following four different types of alternations: (1) /s ~ z ~ əz/ ('phonetic alternants'), (2) /əz ~ (ə)n/ ('suppletive alternants'), and (3) 'zero alternants' (as in *sheep*), and

(4) 'substitution alternants' (e.g. *geese*) (Bloomfield, 1935: 212ff.). Note that as Fisher-Jørgensen (1975: 70) observes, these should be considered separate morphemes because in Bloomfield's analysis, a morpheme should be composed of phonemes. According to him, though these four separate alternations all share the common sememe 'more than one', the first one belongs to the phonology while the latter three belong to the grammar. Summarising Bloomfieldian morphology, Fought (2000: 175) observes that in Bloomfield's framework, three distinct categories for morphological alternations can be recognised: (A) **phonetic** (if the distribution of the alternants can be described in terms of phonetic modification), (B) **automatic** (if the distribution of the alternants is determined by the phonemes of the accompanying forms),[7] and (C) **grammatical** (if the alternations are conditioned by other means). Note that this means that in Bloomfield's morphology, various alternations sharing the same meaning are scattered in different modules of grammar. In the case of English noun plural forms, even if the above four alternations have a single string of phonemes as a base form in order to represent the morpheme in the lexicon, their treatment is scattered among different modules. (We should note that to be accurate, zero and substitution alternations are what he refers to as *tagmemes*—i.e. 'the smallest meaningful units of grammatical form' (Bloomfield, 1935: 166) —rather than morphemes in his framework.)

The above morphological analysis was largely succeeded by the so-called Post-Bloomfieldian linguists such as Z. S. Harris, B. Bloch, C. F. Hockett, and E. A. Nida. They developed the term *morphophoneme*, the term first introduced by Swadesh (1934: 129), to cover the automatic cases—for example, the /s ~ z ~ əz/ alternation in the case of English plural forms. In this example, the morphophoneme /Z/ is introduced to cover the three allomorphic variants. Note that complementary distribution and phonetic similarity between the alternants offer enough ground to admit

[7] Automatic alternations are different from phonetic alternations, because not every [s] in English is subject to this alternation. See Bloomfield (1926: 161-162) for further clarification.

/Z/ as a morphophoneme—which is exactly parallel when we admit the 'phoneme /l/' to cover its two allophones [l'] ('light' or palatalised l) and [ɬ] ('dark' or velarised l), for example.

However, it is evident that this invention of the morphophoneme serves strictly for the purpose of ensuring that the three alternants are actually the same single *signifiant*. In other words, what the settling of the morphophoneme /Z/ enables is for us to treat the regular plural endings as a 'thing' or a full-fledged Saussurean sign having both *signifiant* and *signifié* and being a linearly ordered string within the speech chain.

Carstairs-McCarthy (2005: 14ff.) warns of the possible overuse of morphophonemes. According to him, if the above analysis is applied to the perfect participle of English verbs, then, what he refers to as 'orthographic-*t* verbs' such as *build*, *bend*, *feel*, *keep*, and *spell* are in trouble. For example, *left*, the past participle form of *leave*, has to be analysed as /lEF-D/, where /E/, /F/ and /D/ are settled as morphophonemes for the alternations /iː ~ ɛ/, /v ~ f/, and /ɪd ~ d ~ t/, respectively. (In this case, /E/ and /F/ look after the stem allomorphy, while /D/ looks after the perfect participle formation.) Actually, this kind of analysis leads to unfavourable proliferation of morphophonemes in morphological analysis. Carstairs-McCarthy gives such unfavourable examples as /brX$_1$/ for *bring* ~ *brought*, /bX$_2$/ for *buy* ~ *bought* and /kX$_3$/ for *catch* ~ *caught* (16).

Carstairs-McCarthy also points out a possibility of extending the use of the morphophoneme (17ff.). Apart from having a particular *signifiant*, this morphophoneme /Z/ can be extended to apply to /(ə)n/ as in *oxen*, or even vowel replacement as in *geese*, *mice*, and so on. This means that the morpheme /Z/ would then function as a sort of abstract grammatical feature, rather than a concrete 'thing' with some phonetic reality.

Interestingly enough, such morphological analysis would come very close

to the analysis by which a morpheme is called by a label describing its meaning; namely, the morpheme 'Plural' to cover all the alternations both regular and irregular. This is often seen in morphological works published in Europe. See Matthews (1991: 102ff.), Haspelmath (2002: 26ff.), among others. They talk about 'the plural morpheme in English' rather than the morpheme {Z}.[8]

The above discussions have clearly shown the very strong bias of American structuralism towards seeing the morpheme as *signifiant* rather than *signifié* in Saussurean terms. In Europe, on the other hand, the notion of the morpheme assumes a completely different complexion.

In Saussurean linguistics, the fundamental sign is the word, not the morpheme. Clearly, the morpheme is not conceived as a linguistic unit—as is witnessed by the fact that Saussure's *Cours* did not make mention of the morpheme.[9] Actually, morphemes are understood as 'exponents' or 'realisation' of particular meanings, rather than building-brick-like units having their own meanings. In this sense, Saussurean view has many things to do with onomasiological tradition, which we shall see in 2.3.1.2.2.

In this view, words are mainly understood in the network of syntagmatic and paradigmatic (or associative) lexical relations. Therefore, both *books* and *mice* are signs, whereas neither the suffix *-s* nor the vowel mutation can be a sign in its strict sense because neither of them is a building-block-like element with some linguistic reality. However, as Carstairs-McCarthy (2005: 9-10) and Ullmann (1962: 91-115) point out, Saussure has already emphasised the importance of the motivatedness/unmotivatedness of words.[10] We shall see this with special reference to Ullmann's studies in 2.4.2. For the purpose of this

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[8] It is an American structuralist tradition to show morpheme(s) in braces.

[9] This is also mentioned by Carstairs-McCarthy (2005: 7).

[10] Natural Morphology is also interested in the motivatedness of words. See 2.3.1.3.2 for such related notions as iconicity, morphotactic transparency, etc. in this framework.

section, suffice it to say that in Saussure's *Cours*, more importance is given to the fact that the word *books* is 'motivated'—i.e. 'morphologically transparent' in the sense that it is a combination of *book* and *-s*— whereas the word *mice* is not, than to the morpheme-based analysis of the words.

So far, we have seen that American structuralist morphology tends to see the morpheme as a sign defined in terms of its *signifiant*, whereas British (or European) morphological trend is to see the sameness of the meaning as the important factor in morphological analysis of words at the expense of phonetic similarities of the morphs in question. Then, an interesting problem worth pursuing from the above discussion is whether it is possible to treat the cases where there are no phonetic similarities at all. This is exactly where the problem of CAs creeps in. If meaning can be a driving force of morphological analysis, then, would it be possible to regard *ver-* in *vernal* or *pater-* in *paternal*, for example, as allomorphs of the morphemes meaning 'spring' and 'father', respectively? This indeed is the possibility which I would like to pursue in this thesis.

Suppose that the notion of the morpheme is determined by the sameness of the meaning and complementary distribution among morphs, a reasonable conclusion from this is that the notion of the morpheme is more readily applied to inflectional morphology, rather than derivational morphology, since in inflection the tighter structure is observed than in derivation. And this is exactly what Carstairs-McCarthy (2005: 18-20) draws our attention to. He gives the following three characteristics of inflectional morphology as important factors to explain the easy application of the notion of the morpheme to inflectional morphology: (A) the across-the-board application of inflection, (B) the (almost) one-to-one relationships between *signifiants* and *signifiés* in inflection, and (C) the affixal homonymy rather than polysemy in inflection. Let us consider them below.

First of all, inflection allegedly applies to all members of the particular

syntactic category. For example, all count nouns have plural forms. In the case of derivation, it is usually the case that such across-the-board nature of application is not observed. For example, Carstairs-McCarthy observes that neither *Edinburgh* nor *Madrid* has corresponding inhabitant name. However, we should be careful about a hasty conclusion here because inflection sometimes displays defective morphology—as is witnessed by the modal auxiliaries such as *must*, *may*, and *can* as well as the handful of 'defective lexemes' such as *reputed*, *rumoured* (only perfect participles); and *dregs* (no singular form).[11] Note also that some derivational morphology has quasi-inflectional nature in terms of its productivity. For example, see deadjectival nouns in *-ness*.[12] Probably, the better way of characterising inflection is its syntactic relevance, rather than its across-the-boardness of application.[13] For example, number in the noun is exploited in the syntax in the form of concord or agreement.

Secondly, as to one-to-one relationships between *signifiants* and *signifiés* in inflectional morphology, it is rather difficult to judge whether it is the case or not. I have heard that several native speakers say *cacti* and then change it to *cactuses* probably in order to make it more understandable by the replacement with the more transparent and iconic expression. In derivation, too, there are cases where relatively strict semantic distinction between quasi-synonymous pairs is observed; however, the following description of AHD3 about the distinction between *admittance* and *admission* shows that the situation of derivational morphology is more or less the same as that of inflectional morphology:

> It is often maintained that *admittance* should be used only to refer to achieving physical access to a place (*He was denied admittance to the courtroom*), and that *admission* should be used for the wider sense of

[11] The examples are taken from Huddleston and Pullum (2002: 1435, 1568).

[12] According to Plag (1999: 15), '*-ness* can practically occur with any adjective of the English language'.

[13] For example, S. R. Anderson (1988) regards the syntactic relevance to be crucial in characterising inflectional morphology.

achieving entry to a group or institution (*her admission to the club; China's admission to the United Nations*). This distinction is often ignored, though many writers continue to observe it. But *admission* is much more common in the sense "a fee paid for the right of entry": *The admission to the movie was five dollars.*

(Usage Note under **admission** in AHD3)

Finally, as to the affixal homonymy in inflection and the affixal polysemy in derivation, since the complete list of derivational affixes is hard to come by, we are not in the right position to judge whether Carstairs-McCarthy's observation holds or not. In English, however, the marker of the verb in third person singular present, the regular plural marker of the noun, and the possessive marker of the noun share the same realisation—i.e. /s ~ z ~ əz/.[14] Note that similar cases can also be found in the derivational morphology, as is witnessed by *-al* (a denominal RAdj-forming suffix as in *departmental, educational,* etc.; and a deverbal-noun forming suffix as in *refusal, arrival,* etc.). Also notable is an example like *Sundays* in *I play tennis Sundays*, where the suffix *-s* can be interpreted both as a plural marker and as an adverb-forming affix. This can be seen as an example of the fluctuation between inflection and derivation.

The above discussion suggests that the distinction between inflection and derivation is not so clear-cut in terms of the applicability of the notion of the morpheme as Carstairs-McCarthy suggests. In 2.5, I would like to argue that CAs are suppletively used to fill the slots provided by the special paradigmaticity—referred to as 'pseudo-paradigmaticity'—held between RAdjs and their corresponding BNs. Note that there is a constant semantic relationship between RAdjs and their BNs and it

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[14] One interesting analysis is proposed by Zwicky (1988). He divides morphological operations (rules) and morphological rules (meta-rules) in his morphological analysis. According to his analysis, /z/-suffixation belongs to the morphological operation inventory and different morphological rules such as English plural noun formation, English third-person singular present verb formation, and English possessive noun formation make use of this same morphological operation. Therefore, affixal homonymy/polysemy is easily explained in his framework.

seems that this applies to any noun in English, which means this pseudo-paradigm has something similar to across-the-board application found in inflection.

2.2.2. The Notion of Derivation in Morphology

We now turn to the notion of derivation in morphology. The notion of derivation is frequently used in morphological descriptions. For example, we often say that the words *relational* and *driver* are 'derivatives' from the words *relation* and *drive*, respectively. However, we seldom call such remarks into question. We simply take the notion of derivation as a matter of course. This is especially seen in dictionaries. In Chapter 4, we shall see the lexicographical treatment of CAs. In lexicography, we often see derivatives treated in their lemmata (or main entries) of their base words in the forms of run-ons, or sub-lemmata.

However, a closer examination of the notion of derivation shows that there are many problems to define this notion. Firstly, the notion of derivation presupposes the existence of the source (i.e. the base lexeme) and the target (i.e. the derivative lexeme). See Haspelmath (2002: 269), in which the notion of 'derive (A from B)'[15] means 'build or form (a complex word) A on the basis of (a base) B [...]'. Such a definition applies most convincingly to the cases where simple affixation is involved. However, there are so-called 'ill-behaved morphs' (S. R. Anderson, 1988: 153ff.), which obscure the relationship between the source and the target. For example, such examples as *refer*, *receive*, *defer*, and *deceive* cited by S. R. Anderson (1992: 55) are regarded as having structures without corresponding meaningful morphemes because no sensible meaning can be assigned to *-fer* or *-ceive*. Since the sources of the derivation are difficult to identify in these examples, they obviously pose problems for the notion of derivation.

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[15] This is Haspelmath's **derive$_1$ (A from B)**, which has to be distinguished from **derive$_2$ (A from B)** meaning 'construct a (phonological) surface representation A by applying a series of modifying rules to an underlying representation B'. (269)

Secondly, there is a problem of lexicalisation, which makes us easily lose the track of the above source-target relationships. In this section we are dealing with linguistic synchrony rather than diachrony, so we are not going into the details of the synchrony/diachrony division; however, we see many instances of (the results of) lexicalisation which makes the source-target relationships invisible. For example, no linguist would like to argue, on synchronic grounds, that *business* is a derivative of *busy*.[16] Actually, lexicalisation is crucial when a lexicographer considers how to treat morphologically related words in editing a dictionary. We shall come back to this topic in Chapter 4.

Thirdly, derivation has to be defined on the basis of the individual meanings of the lexeme, not on the basis of the lexeme as a whole. Therefore, not all meanings of a particular lexeme are inherited to the derivatives. This can be shown by the lexeme *fit* (adjective) and its derivative *fitly* (adverb). *Fit* as an adjective has such meanings as 'suitable to a purpose or design; appropriate', 'having the right qualifications; qualifying', 'in good health', worthy or deserving', 'in such an extreme condition that a specified consequence is likely', and '(of a person) sexually attractive' (definitions from CED8); however, the adverb *fitly* only means 'in a proper manner or place or at a proper time' (CED8). It does not mean 'healthily, or in a healthy way', for example. What this suggests is that the lexicon is required to be composed of complete monosemous words. Such a requirement, however, is almost impossible to meet.[17]

Finally, there are wide differences in language users' morphological (or sometimes etymological) knowledge so that morphological (or etymological) analysability differs from one user to another. Thus, though a linguistic connoisseur would be able to analyse morphologically

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[16] Note, however, that there is *busy-ness* which is can be regarded as a (synchronic) derivative of *busy*.

[17] Interestingly, a few learner's dictionaries published by Cambridge University Press have started to adopt this 'monosemous principle' in their macrostructures. See Akasu et al. (1996, 2005) and the discussions in Chapter 4.

such CAs as *paternal*, and *fraternal*, ordinary people cannot connect *paternal* and *father*, *fraternal* and *brother*, respectively. An example of an analysis based on the knowledge of a linguistic connoisseur is Lightner (1983). His derivational morphology includes allomorphy shown in the examples like *father-paternal*, *foot-pedal*, among others. The tack taken by him is to admit high abstractness into his analysis and he makes use of diachronically traceable and describable sound changes under the guise of (quasi-) synchronic phonological perspectives. Interesting as his analysis may be, we cannot help concluding that his analysis does not reflect ordinary language users' morphological insight.

Though the above discussions may make us feel a little pessimistic about the notion of derivation in morphology, the situation is not so pessimistic as it looks. This is because the whole situation will be completely different if we successfully base the notion of derivation on a solid theoretical ground. In 2.3, we shall see how a paradigm-based approach can cope with the allegedly derivational relationships between the CAs and their BNs.

2.2.3. Meaning-Based Approaches to Morphology

In 2.1, we have seen that European morphologists tend to put more importance on the sameness of the meaning and the condition of complementary distribution in settling the notion of the morpheme. The condition of phonetic similarity is no longer what motivates the inclusion of particular forms into a single morpheme. In the European tradition, precisely as Carstairs-McCarthy (2005: 17) points out, 'all that matters is their shared function [...] and complementary distribution.'

Indeed, this strongly suggests the possibility of introducing meaning-based approaches in morphology. Also important is the fact that, as we have seen in 2.2.2, the notion of derivation is decisively determined by the individual meanings of the lexeme. Remember that fact that derivatives cannot inherit all of the meanings of the base

lexemes.

However, before embarking on such a line of research, several words of caution are in order. Firstly, it has been pointed out that semantic studies of any sort can easily fall into a pitfall of being descriptively arbitrary in nature. In order to avoid falling into such a pitfall, as we have seen in 2.2.2, it is necessary to base our approach on a rather solid ground. This is precisely the reason why our approach is based on the notion of the paradigm. As we shall see in 2.5, the notion of the paradigm is based on what Cruse (1986: 118ff.) refers to as 'proportional series' in the present thesis.

Secondly, we should note that the introduction of a meaning-based approach to morphology may lead to the reconsideration of the overall relationships between inflection and derivation. Note that in 2.1, we saw that in inflection, its syntactic relevance ensures the semantic sameness between relevant allomorphs, which is why inflection is characterised by its across-the-board nature of application. In derivation, in contrast, it is normally the case that the sameness of the meaning is not complete—as is witnessed by the previous example of *fitly* which only partially inherits the meaning of the base lexeme FIT[18]—which may probably be why the condition of phonetic similarity is more important in derivation than in inflection. In establishing the notion of paradigm in morphology, we should also take this into consideration.

2.3. Suppletion in Derivation and the Notion of the Paradigm

In this section, we shall see the applicability of the notion of suppletion in derivational morphology. In inflectional morphology, it is unanimously accepted that *went* is the past form of the verb *go* in spite of the fact that there is nothing formal to support this conclusion. Linguists have applied the term 'suppletion' in order to accommodate such a case. Other cases of suppletion in English morphology are shown below:

[18] Uppercase letters are used to represent lexemes.

(2.2) a. am, are, is, was, were (~ BE)
b. worse (~ BAD, ILL), worst (~ BAD, ILL)

In what follows, I would make a review of the notion of suppletion in morphology. Since the notion of suppletion presupposes the existence of some sort of spreadsheet-like, tabular structure whose cells are to be filled in, there must be a certain paradigm assumed to provide a basis for that spreadsheet-like structure. Therefore, the notion of the paradigm is also discussed in this section.

2.3.1. Previous Studies on Suppletion

The notion of suppletion has long been of marginal status in linguistics. The first mention of this term can be traced back to Osthoff (1899). His book is composed of two parts: one is the theoretical part, and the other gives the source of the examples and makes discussion about parallel examples in Semitic languages. The following shows the chapters of the first part of his book in English:

(2.3) 1. Suppletion in verbs (tense, aspect, person);
2. Suppletion in feminine formation in nouns (e.g. *sheep* - *ram*);
3. Suppletion in adjectives (degree);
4. Suppletion in numerals (ordinal formation);
5. Suppletion in pronouns (gender formation, case and number inflection).

Interestingly, (2.3) happens to show that Osthoff admits suppletion in derivation because it is clear that his chapters 2 and 4 are examples from derivational morphology.

Jespersen (1922: 426) observes that Osthoff '[...] collected a very great number of examples from the old Aryan languages of different stems supplementing each other, and has pointed out that this phenomenon is

characteristic of the most necessary ideas occurring every moment in ordinary conversation [...]'. After giving some well-known examples such as *aller* (*je vais, j'irais*) in French, he concludes that 'our remote ancestors were not able to see and to express what was common to these ideas; their minds were very unsystematic, and separated in their linguistic expressions things which from a logical point of view are closely related: much of their grammar, therefore, was really of a lexical character.' (426)

What is interesting is that both Jespersen and Osthoff see suppletion as something which goes counter to a systematic, logical point of view but occurs typically in ordinary conversation. Apart from the first part of Jespersen's remark on the unsystematicity of our ancestors, the latter part of his description draws our attention. It seems that suppletion applies more generally to those words of high frequency that are of conversational use than words of low frequency—witness Bybee's (1985) observation that high-frequency verbs are predominantly irregular.[19] This conforms to a well-observed tendency for high-frequency lexical items to display irregularities. Also interestingly, there is a tendency for certain well-established groups of lexemes to develop suppletive forms. Numerals are a case in point. Dressler (1985b: 106-107) points out that one of the reasons many basic ordinals are suppletives is because children learn to count the series of cardinals and ordinals separately.

In what follows, we shall start by making a review of studies in America before the 1970s.

2.3.1.1. Studies on Suppletion in America before the 1970s

In American structural linguistics, suppletion is often associated with the notions of regularity and irregularity; suppletion is typically characterised as being highly irregular (Bloomfield, 1926: 161). A

[19] A recent study of the regularisation of English irregular verbs by Lieberman et al. (2007: 713) shows that 'a verb that is 100 times less frequent regularizes 10 times as fast.'

suppletive alternant is defined as an alternant which 'bears no resemblance to the other alternants.' (215)

Interestingly, in American structural linguists' works, suppletion is generally regarded as 'an extreme kind of internal change, in which the entire base—not merely a part of it—is replaced by another form.' (Bloch and Trager, 1942: 58). This means that it is something whose status is comparable to other morphological processes such as ablaut and affixation. The main interest at that time was the morphological composition of each lexeme. Thus, {I+BE} for *I am*, {GOOD+ER} for *better*, etc. And it was a job of dictionaries to indicate they are /æm/, /bet/ respectively in the above positions. See, for example, Harris (1951: 239) for the details of such an analysis.

There are at least two characteristics that are worth mentioning. Firstly, all through the period of American structuralism, suppletion has been treated as a sort of exceptional case in which irregular alternants are stored in the lexicon. Secondly, the term suppletion was applied only to such aberrant inflectional forms as *went* (~ GO); and *is*, *am*, *are*, etc. (~ BE). So far as I know, there was nobody who dared to apply this term to derivational morphology in those days.

In the paradigm of generative linguistics, the situation was very much the same until the middle of the 1970s. One of the reasons can surely be ascribed to the low profile early generative grammarians gave to the role of morphology in general. In those days, morphology belonged either to the syntax or to the phonological component. As Hammond and Noonan, eds. (1988: 2) observe, affixation and compounding can be regarded basically as the combination of morphemes and thus considered syntax-like, whereas the realisational aspects of the morphemes are treated in phonology. Several morphologists, including Janda (1983), Spencer (1991), S. R. Anderson (1992), and Carstairs-McCarthy (1992), have mentioned something similar to this situation of 'the bifurcation of

morphology' (Hammond and Noonan, eds, 1988: 3) in the early generative paradigm. In this paradigm, suppletion simply meant extremely irregular allomorphs—not at all derived by any phonological rule—and hence it was concluded that it should be treated in the lexicon and that was the end of the story. (See Hyman 1975, among others)

2.3.1.2. Studies on Suppletion in Europe before the 1970s

If we turn our attention to the European tradition, on the other hand, what we see is a rather different picture. In the linguistic tradition of Germany and France, where there has been a greater interest in lexicology, there have been many works on the semantic relations among words. Although these works did not mention the notion of suppletion itself, they are important in terms of the notion of paradigm to be introduced later, which is worth reviewing here.

Roughly speaking, there are two streams of thoughts according to their research directions; namely, (A) form-to-meaning lexicology, and (B) meaning-to-form lexicology (*semasiologische Betrachtungsrichtung* and *onomasiologische Betrachtungsrichtung*, respectively in Quadri's (1952) terminology).[20]

2.3.1.2.1. Form-to-Meaning Lexicology—Semasiology—and the Study of Semantic Fields

The proponents of form-to-meaning lexicology are Trier (1934), Ipsen (1924), Öhman (1953), Porzig (1934), and Weisgerber (1963), among others. These scholars are often referred to as 'field semanticists'.

• Ipsen

Ipsen (1924) is the first scholar who introduced the term *Feld* ('field') into lexicology. He takes notice of the importance of semantically related

[20] It is European tradition to distinguish the semasiological approach (from form to meaning) and the onomasiological one (from meaning to form). See Lehmann and Martin-Berthet (2000: 24), for example. Hüllen (2000: 146) observes that John Locke actually introduced to his work these two basic approaches to language learning and semantics.

words but he unfortunately demands that not only meanings but forms be identical,[21] which is criticized by Trier because then, such words as *sin*, *witze*, and *vernunst* (= *Vernunft*), all belonging to the group of words meaning 'cleverness' in Middle High German, do not belong to the same semantic field. Thus, before Trier, although one of its aims is to study semantic relations between words, lexicology was still heavily dependent on the form.

• Trier and Porzig

Trier (1934) extends Ipsen's notion of semantic field and emphasises the importance of purely meaning-based analysis of words. Ikegami (1975: 268ff.) points out the following four important points of Trier's theory. Firstly, Trier's field is regarded as the intermediate stage between the vocabulary (*Wortschatz*) and the word (*Wort*). Trier's proposal is that words constitute the field on the basis of their conceptual relatedness with other words and that the fields constitute the vocabulary in their turn. What is important is his characterisation of semantic fields as linguistic reality ('sprachliche Wirklichkeiten' (Trier, 1934: 430)). Secondly, Trier sees lexical meanings as something only determinable in semantic fields. Ikegami (1975: 269) explains this by showing that the meaning of the word 'pass' in the examination is determined only by the existence of other grades. Its meaning is completely dependent on whether it contrasts with only 'failure' or it contrasts with a group of other grading words such as 'excellent', 'good', and 'average'. According to Trier, '[t]he value [Geltung] of a word can only be determined by defining it in relation to the value of neighbouring and contrasting words.' (1934: 6, translation by Lyons, 1977: 251) Thirdly, Trier introduces the notion of *Zwischenwelt* (literally, 'in-between world') to connect *Sein* ('real world') and *Menschen* ('human beings') and on that plane, the vocabulary of a language is regarded as an integrated system of lexemes interrelated in sense. This means that we humans recognise the world through the

[21] Note that Ipsen was a well-known comparative linguist of Indo-European languages, which is why he saw formal (or, etymological) facts as important as semantic facts.

vocabulary system of a language which exists between *Sein* and *Menschen*. Fourthly, Trier applies his theory of semantic fields to diachronic studies. Among the well-known examples of this application is the study of the semantic field 'intellect' in Middle High German. Trier convincingly shows how the three-way contrast found in this semantic field around 1200 (*kunst-wîsheit-list*) is replaced by another three-way contrast (*wîsheit-kunst-wizzen*) a century later.[22]

Although Trier's works generally focus on the importance of paradigmatic meaning relations between lexemes, Porzig (1934) emphasised the importance of syntagmatic meaning relations held between them. He looks upon the lexical relations such as *gehen* ('to go') — *Füsse* ('feet'), *greifen* ('to grip') — *Hand* ('hand'), *sehen* ('to see') — *Auge* ('eye') as basic lexical relations and referred to them as *wesenhafte Bedeutungsbeziehung* ('essential meaning-relations'). Note that these pairs are composed not of etymologically related lexemes but of purely semantically related lexemes based on the syntagmatic meaning relations between them. He even observes that the groups of derivationally related lexemes such as *Reiter*, *Reiterin*, *Bereiter*, *abreiten*, *vorreiten*, *zureiten*, and *beritten*. (~ *reiten*) also form a sort of semantic field.

The notion of suppletion is based entirely on the paradigmatic dimension of lexemes, so we should not dwell on their field theory too much. What is interesting, however, is Porzig's recognition that the same *Sachverhalte* ('phenomena') can sometimes be expressed both by using one lexeme and by using a lexeme combination, which obviously has something to do with the notion of suppletion. His examples are *Rappe* ~ *schwarzes Pferd* 'black horse', *Häuschen* ~ *Kleines Haus* ('small house'), *eilen* ~ *schnell gehen* ('to go fast'), etc. Note that Saussure in *Cours* (1916) distinguished motivated vs. unmotivated lexemes in his lexicological analysis. According to Saussure's analysis, the first expressions in the

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[22] Trier concludes that this semantic change reflects the collapse of Catholic values. See Guiraud (1955:72) and Ullmann (1962: 248-249) for detail.

above pairs before the tilde are 'unmotivated' expressions, whereas the second expressions are 'motivated' ones. See 2.3.1.3.2 and 2.4 for the notions of motivatedness and morphological transparency.

Indeed, this observation of Porzig's is also close to Bally's (1950) notion of *syntagmes implicates* ('implicit syntagms'), by which he means that certain lexemes can be analysed as *cumul des signifiés* ('accumulation of signifieds'). To give examples from English, we see *starve* as a combination of 'to die' and 'hunger', *shudder* as a combination of 'to tremble' and 'cold', and so on. Here, it is not at all impossible to see *starve* and *shudder* as suppletive forms.[23]

• Weisgerber

One of Weisgerber's (1963) contributions to the field theory is that he divides the subject of lexicology into *gestaltbezogene Forschung* ('form-related studies') and *inhaltbezogene Forschung* ('content-related studies'). He then insists that lexicology should not be limited to the former studies but proceed to the latter studies.

The simplest form of *gestaltbezogene Forschung* can be seen in alphabetical dictionaries. Their macrostructures are based entirely on the alphabetical principle, but they all treat the meaning of lexemes only in their microstructures. [24] Therefore, however closely CAs are semantically related to their BNs, they are treated in different places in the microstructures of dictionaries because of the alphabetical principle.

Indeed, I think Weisgerber is right in pointing out that semantic aspects of lexemes have not been fully taken account of in mainstream morphology.[25] He points out the following four methods in treating the

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[23] Dressler (1985a) observes that in inflectional languages more examples of suppletion are observed than in agglutinative languages. This is a reasonable observation because Bally's *syntagmes implicates* can essentially be regarded as fusion, or inflection.

[24] See 4.1, Hartmann and James (1998), and Hausmann and Wiegand (1989) for the definitions of *macro-* and *microstructures.*

[25] Linguists in the generative semantics camp are probably exceptions. Levi (1978) for example,

meanings of a lexeme: (A) explanation by using example sentences, (B) description of extralinguistic things or situations, (C) giving abstract definitions, and (D) giving synonyms, none of which are satisfactory because they are all attempts to see the contents from outside, as it were. In his view, studies based on these methods should be complemented by 'inhaltbezogene Forschung'. Note that in 4.5.2, it is argued that alphabetical semasiological dictionaries should contain onomasiological information. Therefore, Weisberger's view can be regarded as a precursor to my argument in Chapter 4.

Interestingly, his reasoning is very similar to my paper (2002) which introduces the notion of form-based and meaning-based pseudo-paradigms. Weisgerber includes such examples as onomatopoeia, rhyming as examples of *gestaltbezogene Forschung*, all of which are treated under the heading of form-based pseudo-paradigm in my work. We shall come to this point later in 2.5.4.1.

Actually, this position of Weisgerber opened the possibility for another important theoretical stream, onomasiological studies, which we shall look at in the next section.

2.3.1.2.2. Meaning-to-Form Lexicology—Onomasiology

Onomasiology is an attempt to study lexemes from their contents—i.e. the typical question is: 'How is a certain meaning realised as a certain lexeme?' rather than 'how is the meaning of a certain lexeme described?' Note that onomasiology must be founded on clearly demarcated semantic contents because otherwise we cannot think of any lexeme as an exponent, or a realisation of some meaning.

We saw in 2.2.1 that there are two different views on morphology. One is to see a lexeme as composed of morphemes which are building-block-like

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points out that practical dictionaries are not at all satisfactory because the semantic relations between CAs and BNs are not described.

units; and the other is to see a morpheme or a word as exponents, or realisations of particular properties. It is clear that onomasiology has more things to do with the latter tradition than with the former.

According to Shibata (1975: 184), one of the motivations for taking content or meaning as the starting-point can be ascribed to the development of linguistic geography triggered by the completion of the linguistic atlas of France. In spite of the semantic identity, things such as *honeybee*, or *laundry* are named so differently from one dialect to another that it attracted people's attention.

The first scholar who mentioned the possibility of onomasiology was H. Schuchardt and the proponents of onomasiology include Quadri, Hallig, Wartburg, Dornseiff, among others.

• Quadri

Quadri (1952) is one of the most comprehensive surveys on onomasiology. He explicitly observes that onomasiology takes clearly demarcated things or ideas as its starting-point. The following is the citation from him on the definition of onomasiology:

> Die Onomasiologie erscheint auf Grund des heutigen Forschungsstandes als jene sprachwissenschaftliche Disziplin, welche — ausgehend von einer mehr oder weniger abgegrenzten, im Bewusstsein einer Sprachgemeinschaft lebendigen Einzelvorstellung oder von einer Gruppe verwandter Begriffe — das Ziel verfolgt, deren verschiedenartige lexikologische, stilistische, metaphorische und allfällige extragrammatikalische Ausdrucksmöglichkeiten in Schriftsprache und Mundart für ein bestimmtes Sprachgebiet zu sammeln und unter eingehender Berücksichtigung aller begrifflichen, sachgeschichtlichen, geographischen und psychologischen Faktoren diachronisch und synchronisch zu deuten. Sie soll damit einen Beitrag leisten an die Lösung des allgemeinen Problems von

Sprachtradition und Sprachwandel.

(Quadri, 1952: 175)

Indeed, this is Quadri's manifestation of the idea that the exponent, or realisation of particular meaning, should be properly dealt with in lexicology. Though his main interest lay in the field of geographical names, his work had a great influence on later scholars in this field.

• Dornseiff

Dornseiff (1954) calls his version of onomasiology *Bezeichnungslehre* ('study of naming'). Based on Quadri's (1952) work, he divides lexicology into *semasiologische Betrachtungsrichtung* (literally, 'semasiological direction of observations') and *onomasiologische Betrachtungsrichtung* (literally, 'onomasiological direction of observations'), which does not have any intermediate stage like Trier's *Zwischenwelt.*

Dornseiff's introduction (1954: 29-39) provides us with a good historical survey of non-alphabetical dictionaries from ancient times. He also gives theoretical considerations to onomasiology in general (39-52), and finally he makes explanations of secondary effects of onomasiological dictionaries.

Dornseiff himself was also a lexicographer; and his book, Dornseiff (1954), is a dictionary of his own editing. Shibata (1975: 260) points out that being an onomasiologist adopting a 'meaning-to-form' research framework, Dornseiff, as a classical philologist, was able to experience for himself the re-creation of classical works. This is because adopting such a framework enabled him to vicariously experience the authorial positions of the great classical writers. Dornseiff himself asserts that the onomasiological approach contributed greatly to the development of classical philology.

• Hallig and Wartburg

Hallig and Wartburg's (1963) aim is to establish fundamental conceptual system of lexicology, as its title, *Begriffssystem als Grundlage für die Lexikographie*, shows. They first criticise Dornseiff's (1954) work for its lack of generality in descriptions, lack of consistency in its entry arrangement, and its unorderly microstructural presentations. Then, they try to establish more general, universal semantic categories. After focusing on what Güntert (1956) refers to as 'general meaning' (*generelle Bedeutung*) to the exclusion of other collateral meanings such as emotional colourings, pragmatic tones, and improvisatory semantic narrowing, they define fundamental concepts as 'Etwas in sich Ruhendes, Objektives' ('something objective which stands by itself'), which are realised as lexemes in a language.[26] Note that these concepts are kept independent of meanings. In this sense, they assume something similar to Trier's *Zwischenwelt* in their onomasiological framework.

Hallig and Wartburg (1963) first classify their concepts into three categories: (A) cosmos, (B) human beings, and (C) a-priori categories. They further classify subconcepts into different subcategories and they show how they are realized as lexemes. In other words, it has many things common with Roget's-type thesauri we use today.

As is always the case with semantic classification, Hallig and Wartburg's (1963) conceptual classification is not immune to criticism. As to the first edition of their dictionary, Tollenaere (1960: 20) points out that their system is too arbitrary—witness such examples as *faible*, *indécis*, and *vague*. Also interestingly, Tollenaere mentions that onomasiological dictionaries all face word-finding problems and thus, in many cases need the help of alphabetical access structures. We shall return to this topic later in Chapter 4.

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[26] Hallig and Wartburg's (1963) 'fundamental conceptual system' is strongly influenced by Weisgerber's works. Actually, Quadri's version of onomasiology is severely criticised by Weisgerber for not having something which corresponds to his 'Sprachliche Zwischenwelt'.

2.3.1.2.3. Componential Analysis of Lexemes

Shibata (1975: 274) points out that there are two directions in the componential analysis of lexemes. One direction was developed in Europe and the other was developed in America. The direction in Europe was formed through the influence of lexicological studies and structural linguistics in Europe treated in 2.3.1.2.1, and the direction in America originally comes from anthropological studies of Amerindian languages.

• European Studies on Componential Analysis of Lexemes

According to Shibata (1975), Hjelmslev (1971) was one of the first scholars who introduced componential analysis to lexicology. Hjelmslev observes that one of the tasks of linguistics is to treat lexemes economically as combinations of sub-elements which he calls non-signs, or *figulae*—witness the following examples of sex difference of animals and humans:

(2.4) ‚ram' = ‚he-sheep'
‚ewe' = ‚she-sheep'
‚man' = ‚he-human being'
‚woman' = ‚she-human being'
‚boy' = ‚he-child'
‚girl' = ‚she-child'
‚stallion' = ‚he-horse'
‚mare' = ‚she-horse'

(Hjelmslev, 1963: 70)

Although this sort of lexicological study is a peripheral matter in Hjelmslev's concern, this study of his suggests the possibility for componential studies of lexemes, which leads to such works as Greimas (1966), Pottier (1963), and Coseriu (1970) in Europe.[27]

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[27] See Shibata (1975: Chapter 5), Lehmann and Martin-Berthet (2000: 22-25) for European trends of componential analysis.

Greimas (1966) uses several *sémemes* such as *spatialité*, *dimensionalité*, *verticalité*, *horizontalité*, *perspectivité*, and *lateralité* to analyse several pairs of lexemes in French such as *haut-bas*, *long-court*, *large-étroit*, and *vaste-épais*. Pottier (1963), on the other hand, analyses such words as *chaise* ('chair'), *fauteuil* ('armchair'), *tabouret* ('stool'), *canapé* ('sofa'), and *pouf* ('special kind of stool') with special reference to their 'pertinent semantic characteristics' ('le trait sémantique pertinent', in his words). Coseriu (1970) analogises his semantic componential analysis to the distinctive feature theory in phonology. In his framework, the *Lexeme* is a bundle of *Semes*, just like the phoneme is a bundle of distinctive features. After studying the differences between the phoneme and the lexeme, he also shows how such words as *to sit*, *to lie*, and *to stand* can be analysed by referring to *Archiseme* 'to occupy a position on the surface of something' and distinctive *Semes* such as 'static' and 'dynamic'.

• American Studies on Componential Analysis of Lexemes

American studies of componential analysis go back to Franz Boas' studies of Amerindian languages and culture. Scholars such as Lounsbury (1956) and Goodenough (1956) belong to this category. Generally speaking, their works are based on field studies of Amerindian languages, in which kinship terminology, animal or plant names are often objects of componential analysis. Shibata (1975: 294) notes that their works have little in common with European studies of componential analysis in which familiar languages of the Romance and Germanic groups are researched.

2.3.1.2.4. A Short Summary

Many of the works in European lexicologist tradition are not related directly to the notion of morphological suppletion.[28] However, European lexicologists' works are of the utmost interest in terms of their emphasis on lexical semantics or the notion of paradigm because at least some

[28] Jaberg (1965) is an exception. Jaberg is an onomasiologist and is strongly influenced by Quadra's work.

scholars have made mention of the notion itself, which makes a good contrast to the situation in America. Before proceeding to see the studies in the 1970s, let me just summarise what we have seen.

Firstly, as to the semantic studies of lexemes, the European tradition has been more advanced than the American tradition. The American tradition of lexical studies before the 1970s was so much form-oriented that it paid no attention to the semantics of lexemes. However, the real study of language does not consist purely of formal analyses; we should always bear in mind that formal and semantic descriptions of a lexeme should go hand in hand. One of the reasons for this advancement in European lexicological studies can be ascribed to the general indifference to semantics in the American tradition due to the development of the so-called distributionalism.

Secondly, as to the European tradition, although the scholars have not used the term suppletion, what they are interested in is very close to the notion of derivational paradigmaticity developed later in the 1980s. This is because in Europe, scholars tended to analyse the whole vocabulary of a language rather than certain groups of words of limited semantic fields. In America, on the other hand, scholars' interest was generally on particular groups of words such as kinship terms and basic verbs without being extended to apply to the whole vocabulary of the language. Interestingly, the general concern of European onomasiologists is how a particular meaning is realised as a certain lexeme, which is very similar to the concern of contemporary cognitive studies on how particular conceptual slots are filled in paradigms. Indeed, the whole problem of suppletion in derivation can be subsumed under the question of how a particular conceptual slot in a paradigm is filled by a lexeme which has no formal relations to its base lexeme. In this sense, the European onomasiological tradition can be considered a precursor of the paradigm-based approach to derivation.

Thirdly, the general reluctance of American scholars to admit the notion of suppletion to apply to derivation suggests that there is some difference between suppletion in inflection and in derivation. As we have seen in 2.2.1, one of the reasons is that in contrast to derivation, inflection applies across the board, which contributes to the ideal nature of paradigmaticity on which suppletion is based. The paradigm is most conveniently represented in the form of a table or a spreadsheet, so this across-the-board applicability of inflection accommodates it better than derivation. However, this also strongly suggests the applicability of suppletion in some subfield of derivational morphology which has such quasi-inflectional nature as having paradigmatic organisation or across-the-board applicability.

Fourthly, suppletion is interesting not only in terms of morphological theory but also in terms of lexicography. Just as European lexicologists point out, suppletive forms are located distinct from their non-suppletive forms in alphabetical dictionaries, and hence some sort of cross-referencing device is necessary to grasp the semantic relations between them. This also provides interesting topics to discuss in Chapter 4.

2.3.1.3. Studies on the Lexical Fields and Suppletion since 1970

Since Chomsky (1970), the importance of morphology has gradually been acknowledged by the scholars of the generative paradigm. In this work, Chomsky abandoned nominalisation transformations explicitly, which marks the starting of the lexicalist position. Thanks to this position, the lexicon—and consequently morphology—gradually started to attract linguists' attention. Textbooks such as Spencer (1991) and Carstairs-McCarthy (1992) mark this year 1970 as the starting point for the revival of morphology.

In this section, we shall see mainly two different fields of interest in the studies related to suppletion: one is the further development of

componential analysis and the field theory, and the other are Natural Morphology and paradigm-based approach to morphology developed mainly in Germany.

2.3.1.3.1. Further Development of Componential Analysis and the Field Theory

Componential analysis of lexemes and the field theory developed further in the 1970s. The examples are Lehrer (1974), Lyons (1977), Kittay and Lehrer (1981), Lutzeier (1981), and Cruse (1986).

• Lehrer

Lehrer's work (1974) is a good summary of componential analysis and the field theory. She first observes that '[a] field theory treats a related set of words that belong to a domain (semantic field, subject area).' (7) She continues that '[f]or example, *glass* 'a container' would be studied along with *cup*, *bowl*, *mug*, *vase*, and other container words to see how these items contrast.' (7) This is indeed very close to Porzig's *wesenhafte Bedeutungsbeziehung* in that it assumes certain domains in semantic descriptions of lexemes whose elements stand in paradigmatic or syntagmatic relations to each other. As to the relationship between componential analysis and the field theory, she observes that the former presupposes the latter. According to her, '... the necessity of looking at a set of words in a carefully delineated area which have basic semantic features in common "but whose meanings contrast with each other by virtue of one or more differences in respect to several other features" (Lounsbury, 1956: 193).' (46-47).

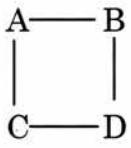
In her analysis of sound words, Lehrer (1974: 36) not only lists nouns related semantically with sounds (e.g. *sound*, *noise*, *loudness*, *softness*, *stillness*, *quiet*, *silence*, etc.), but also morphologically and semantically related words of different parts of speech (e.g. *soundless*, *noisy*, *audible*, *loud*, etc. (adjectives); *noisily*, *audibly*, *loudly*, etc. (adverbs)), which seems

to us a rather ad hoc and miscellaneous list of sound words.[29]

• Cruse

Cruse (1986) 'has provided perhaps the most comprehensive study of semantic relations.' (Kittay and Lehrer, 1992: 5). In this book, he treats four types of lexical fields: (A) hierarchies, (B) proportional series, (C) doublets and (D) clusters.[30] Hierarchies are exemplified by tree diagrams, [31]proportional series by relations of proportionality, doublets by pairs of opposites; [32] and clusters are groupings of lexemes characterised by a lack of structure.[33] Of the four types, proportional series needs further explanation. According to him, the simplest proportional series consists of a single 'cell' which is composed of four elements having the proportional relations shown in (2.5a) ((2.5b) shows its example):

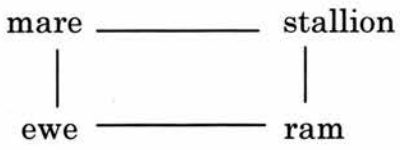
(2.5) a.



A is to B as C is to D
B is to A as D is to C
A is to C as B is to D
C is to A as D is to B

(Cruse, 1986: 118-9)

b.



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[29] Note that some field theorists restrict the field to lexemes belonging to the same part of speech, while others like Lehrer (1974), Lyons (1963, 1968) do not.

[30] Cruse prefers to use the term 'lexical configurations' to 'lexical fields'.

[31] For example, Cruse (1986: 115) gives the relation '— larger than —' (e.g. *mountain: hillock: mound*) as an example of a non-branching hierarchy.

[32] Doublets are typically exemplified by such antonyms as *high: low, buy: sell*, etc.

[33] Clusters are typically exemplified by such synonyms as *begin: commence, munch: chew*, etc.

(Cruse, 1986: 120)

The basic idea of the proportional series is not new. In historical linguistics, for example, it plays a crucial role in 'four-part analogy'.[34] In morphology, its importance has already been pointed out by Greenberg (1957: 20) in the form of the 'square'.[35]

As we shall see in 2.5, I take this to be of the utmost importance in defining the notion of the paradigm in morphology.

2.3.1.3.2. Natural Morphology and Paradigm-Based Approaches to Morphology

Though Chomsky (1970) marked the revival of morphology, suppletion had been of marginal interest among scholars until around the latter half of the 1970s. The literature on suppletion has been rather scanty in nature, as is witnessed by Beard and Szymanek's (1988) bibliography of morphology; it contains only 10 works relating to suppletion.

However, the notion of suppletion appears as one of the main themes of research in Natural Morphology and paradigm-based approaches from the late 1970s. Especially important in Natural Morphology or other paradigm-based approaches are such works as Dressler (1985b), Pilch (1985), and Mel'čuk (1976, 1994). Fertig (1995) mainly works in the Natural Morphology framework, but his version is reinforced by grammaticalisation theory. According to him, suppletion should be most common among grammaticalised words as well as among those lexical items whose semantic generality make them likely candidates for grammaticalisation.

2.3.1.3.2.1. Dressler (1985b)

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[34] See Hock (1986: 167ff.), for general discussions and typology of analogy in historical linguistics.

[35] Igor Mel'čuk (personal communication) pointed this out for me. See also Ōta (1960: 40), who also makes mention of the importance of the 'square' in Greenberg's book.

As an espouser of Natural Morphology, Dressler (1985b) starts his article on suppletion by introducing three important parts of which Natural Morphology is composed: (A) a theory of universal morphological naturalness, (B) a typological theory, and (C) a theory of language-specific system adequacy.

With regard to (A), his theory of universal morphological naturalness is based on the following eight-point scale of morphotactic transparency:

(2.6)[36]

I:	Intrinsic allophonic PRs:	*excite*$ + *ment* / *excite*[37]
II:	PRs intervene e.g. resyllabification	*exis*$*t* + *ence*/ *exist*
III:	neutralising PRs e.g. flapping	*rid* + *er* (American) / *ride*
IV:	MPRs (no fusion) velar softening	*electric* + *ity* / *electric*
V:	MPRs with fusion	*conclusion* / *conclude*
VI:	MRs intervene e.g. GVS	*decision* / *decide*
VII:	weak suppletion	*childr* + *en* / *child*
VIII:	strong suppletion (no rules!)	*be*, *am*, *are*, *is*, *was*

(Dressler 1985a: 316ff.; 1985b: 98)

As is shown in (2.6), suppletion phenomena (VII and VIII) are the least transparent morphotactically. In addition, in terms of diagrammaticity, suppletion is, if not antidiagrammatic (as is the case with subtraction), adiagrammatic, or at least not as diagrammatic as simple suffixation.[38]

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[36] 'PR', 'MPR' and 'MR' stand for 'phonological rule', 'morphonological rule', and 'morphological rule', respectively. GVS = Great Vowel Shift. $ in the examples marks syllable boundaries.

[37] According to Dressler (1985a: 317), the relevant intrinsic allophonic PR 'differentiate word- and syllable-final /t/ very slightly'.

[38] Dressler bases his version of Natural Morphology on Peircean semiotics. According to Dressler (1987: 21, footnote7), '[a] diagram is a sign which is characterized by analogical relations in its signatum and its signans (e.g. in its content and in its shape.) That a certain coding is diagrammatic means that the coding faithfully reflects the 'markerfulness' of the signata. 'Markerful' and 'markerless' are the terms adopted by Carstairs-McCarthy (1992: 218) to mean 'merkmalhaft' and 'merkmallos' in Mayerthaler (1981). Mayerthaler (1981) prefers the term 'constructionally iconic' to 'diagrammatic'.

Several important questions arise from (2.6). Firstly, how is it possible to draw a line between suppletion and non-suppletion? Indeed, as we have seen in 2.2.2, it has turned out to be extremely difficult to do this because:

(a) There are many types of so-called 'ill-behaved morphs', such as are illustrated by *refer*, *receive*, *defer*, *deceive*, among others, in which no meaningful morphemes can be assigned to *-fer* or *-ceive*;

(b) Lexicalisation obscures the iconicity—and hence the morphotactic transparency—of the alleged derivatives, as is witnessed by *business* (not meaning 'the quality of being busy'), *waiter* (not meaning 'a person who waits'), etc.;

(c) The notion of derivation hinges upon particular meaning of a lexeme, not upon the lexeme as a whole—witness *fitly* which does not mean 'healthily'; and

(d) The notion of derivation also depends heavily on the language users' knowledge of morphological (or some times etymological) composition of the lexeme—as is witnessed by *paternal* which a linguistic connoisseur would be able to connect to its BN *father*.

In her study of the French influence on Middle English morphology, Dalton-Puffer (1996) revises the above eight-point scale (2.6) into a six-point scale. If we compare Dressler's version with Dalton-Puffer's, we find the following differences: Firstly, the threshold III is given up because, naturally enough, there is no phonetic evidence for such neutralising PRs because the object of study is Middle English. Secondly, and more importantly, the threshold VIII is also completely given up because the lexemes belonging to this threshold are considered to be in the province of lexical relations. In explaining the difference between

the pairs *obey: obedience*, *gall: bilious* and *steal: theft*, she makes the following observation:

> My sketch of a solution for the moment is that the distinction between *obey: obedience*, *gall: bilious* and *steal: theft* has to do with two things: the amount of phonological material that is shared between the members of the pair and whether an isolatable, suffix-like element occurs in one member. The pair *obey: obedience*, for instance share several phonemes in a certain order whereas *gall: bilious*, *steal: theft* do not. On the other hand, *obey: obedience*, *gall: bilious* allow us to isolate morpheme-like strings (*-ence* and *-ous*) that also recur elsewhere in the vocabulary (*diligence*, *rebellious*), an operation that is impossible with *steal: theft*.
>
> (Dalton-Puffer, 1996: 57-58)

Based on the above observation, she considers those belonging to the threshold VIII to be outside the scope of her scale of morphotactic transparency.

The motivation behind Dalton-Puffer's strategy is quite understandable. That is because she has to base her analysis on extensive Middle English data; and thus she has to seek a realistic solution. However, although there surely is some line recognisable between such CAs as *vernal* (~ spring), *seismic* (~ earthquake), *feline* (~ cat), on the one hand; and such CAs as *diaconal* (~ deacon), *linguistic* (~ language), on the other; it still turns out to be difficult to draw a rigid line between them. We shall return to this topic in 2.4.

The second question arising from (2.6) is: If suppletion is so unnatural in terms of transparency or diagrammaticity, why does it occur at all? Dressler's answer to this question is that there are many parameters of naturalness in conflict with one another so that 'all languages must contain both rather/very natural techniques of some parameters and

rather/very unnatural techniques from others.' (Dressler 1985a: 99-100). According to him, agglutinative languages value high transparency and high diagrammaticity, at the expense of high indexicality and small word size; whereas inflectional languages have high indexicality and relatively small word size at the expense of high transparency and diagrammaticity.[39]

As to the notion of suppletion, Dressler observes that since agglutinative languages value high diagrammaticity, suppletion is rare; whereas inflectional languages do not value diagrammaticity highly, which leads to more suppletive phenomena observed in them. In his framework, these typological considerations constitute a kind of filter of the universal theory of naturalness.

Dressler bases the definition of suppletion on Mel'čuk's (1976) definition. Mel'čuk defines suppletion as 'the relationship between any linguistic units A and B which meet the following condition: the semiotic distinction between A and B is regular, while the formal distinction between them is not regular.'[40] (50) Thus, nothing prevents us from interpreting the applicability of the notion to derivation as well as inflection, which is taken for granted in Dressler's paper. He admits suppletion to apply to derivation as well inflection. However, Dressler treats *paternal* (~ *father*) and *maritime* (~ *sea*) differently in English. According to him, *maritime* is non-suppletive, whereas *paternal* is suppletive because '[...] *sea* is productively used in compound formation which substitutes for adjective formation.' (104) However, more likely reason is that *maritime*

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[39] Indexicality is also one of the parameters derived from Peircean semiotics. An index is a sign by which the signans directly refers to the signatum. If a morphological marker refers to the base to which it is attached just as a signpost points towards a neighbouring town, it is regarded as indexical. It is clear that, as Carstairs-McCarthy (1992: 224-226) explains, affixes are far better indices of their bases in such fusional languages as Latin than in such agglutinating languages as Turkish. Note, for example, that affix stacking is usually highly constrained in Latin (Nothing can intervene *insul-* and *-i:s* in *insuli:s* 'island-Ablative PL', for example.), whereas in Turkish, some other materials can intervene between the base and the affix (See *-dan* in *ada-dan* 'island-SG-Ablative', *ada-lar-dan* 'island-PL-Ablative'.)

[40] As we shall see in 2.3.1.3.2.3, 'being regular' roughly means 'being generated by a rule', or 'being rule-based' in Mel'čuk's framework.

cannot be considered as a rule-based example because there is no such suffix as *-ime* in English. We shall come back to this topic in 2.3.1.3.2.3, when we review Mel'čuk's works.

Dressler then gives four case studies where suppletive phenomena are typically observed: (A) inhabitants' names (e.g. *Glaswegian* (~ *Glasgow*), etc.), (B) 'learned Latinate substitutions' (e.g. CAs like *paternal* (~ *father*), etc.), (C) feminine forms (e.g. *hen* (~ *cock*), etc.), and (D) ordinals (e.g. *first* (~ *one*), etc.). Of them, (B) has a special relevance to our present study on CAs. After pointing out that Latinate substitutes in general still have a sociolinguistic and stylistic function expressing learnedness, he ascribes the suppletive forms of those words to the conflict between morphological naturalness and sociolinguistic factors. In his words, 'suppletion signals metaphorically a pragmatic difference' (105). By this Dressler means sociolinguistic or stylistic implications of suppletion. We shall return to this topic in Chapter 5.

2.3.1.3.2.2. Pilch's (1985) Paradigm-Based Approach

Pilch (1985) completely subsumes derivation under the notion of paradigm. Specifically, he assumes that the morphological analysis of a word consists in assigning it to a particular derivational (or, inflectional, if applicable) paradigm. See the following example of his *exemplary paradigm*, based on which the prefix *re-* is defined:

(2.7)

write	:	rê-wríte
start	:	rê-stárt
consider	:	rê-consíder
read	:	rê-réad
rê [sic]-write	:	rê-rewrite

(Pilch, 1985: 411)

What is interesting about his approach is that the derivation itself is defined on the basis of the notion of paradigm. In Pilch's own words,

'[e]ach pair is similar in phonological form, grammatical function and meaning, and the differences involved are the same in all pairs.' (412) Therefore, contrary to the general assumption that derivation is defined on formal grounds,[41] it is supported in terms of meanings as well as forms.

(2.7) is an exemplary paradigm in that it defines simple affixation—in this case, *re*-prefixation. As we have seen above, Pilch includes the formal side as well as the semantic side into his characterisation of suppletion. Of course, however, not all situations are as neat as the above example. In morphology, we have 'ill-behaved morphs', problems caused by allomorphy, and so on. Therefore, we have to loosen the formal side of the above characterisation to some extent to accommodate such cases.

Consideration of such 'deviant' cases leads Pilch to integrate derivation into lexicology, and the notion *lexical paradigm* is introduced of which *morphological paradigms* are subsets. See the following examples of the toponym–inhabitant relations, in which the whole pair set makes up a lexical paradigm and (2.8a) – (2.8d) are morphological (sub-) paradigms.

(2.8)

	Toponym	Inhabitant
a.	London	London-er
	New York	New York-er
	New Zealand	New Zealand-er
b.	Seattle	Seattl-ite[sic]
	Ann Arbor	Ann Arbor-ite
	Michigan	Michigan-ite
c.	Halifax	Haligonian

[41] Once again, remember, for example, Jackson and Zé Amvela's (2007: 242) definition of the notion of derivation as 'the process of word formation involving the addition of prefixes or suffixes to a stem.'

	Aberdeen	Aberdonian
	Wales	Welshman
d.	Birmingham	Brummy
	Indiana	Hoosier
	North Carolina	Tarheel

(Pilch, 1985: 415)

One thing that should be kept in mind is that lexical paradigms sometimes have gaps. For example, in toponym-inhabitant relations, *Edinburgh*, *St Andrews*, etc. do not seem to have any corresponding inhabitant nouns.[42]

Apart from being paradigm-based, Pilch's lexical paradigm is similar to Zwicky's (1988) morphological analysis in that it separates 'morphological operations' from 'morphological rules'. In Zwicky's framework, English plural nouns, for example, are generated by a morphological rule of inflection, which is composed of several morphological operations such as *s*-suffixation, *en*-suffixation, and vowel mutation. Similarly, when talking about derivation in Pilch's framework, we see the whole lexical paradigm; but when it comes to treating each morphological operation, we come down to the level of morphological paradigms.

A word of caution is in order about the term 'lexicology', which Pilch uses without definition. Apparently, when he uses this term, he has something in mind similar to Lipka's (2002) characterisation of the term. Lipka (2002: 5) writes: 'It is certainly true that lexicology must include both the study of individual words and their structure [...] and of the overall structure of the vocabulary as a whole [...], and that it cannot describe either from a purely formal point of view, without considering semantic aspects and relations.'

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[42] I remember people living in Edinburgh sometimes humorously coined such words as *Edinburghian*, or *Edinbugger* (See *Weegies vs Edinbuggers*, edited by Ian Black, a free book from *SCOTLANDonSUNDAY*, August 2008!), which are good examples of nonce word formation.

Indeed, the notion of lexical paradigm gives a key to describing the relations between BNs and their CAs. However, here again, we have to face the same problem as before: How should we define lexical paradigms by characterising them differently from mere semantic relatedness between words?

In Pilch's paper, the term suppletion is used only once, which is in footnote 6, in which he observes: 'Professor Dressler [...] applies the terms 'suppletion' and 'derivation' to all pairs of the lexical paradigm [...].' Apparently, Pilch consciously avoids bringing the term 'suppletion' or 'derivation' in the lexical paradigm.

Interesting is the notion of *satellite words* of his paper, which can be defined as synonyms co-existing in the paradigm with the *established words*, like *Kiwi* co-existing with *New Zealander* in (2.8). It is often the case that satellite words have developed special connotations.

As to polysemy, Pilch regards it as a fact of linguistic synchrony. Paradigms contribute to addition of certain meanings, but these meaning are susceptible to special semantic changes. Moreover, it often happens that such special semantics is conventionalised and is synchronically in rivalry with the paradigmatic meaning. For example, *waiter* 'who waits on patrons in a restaurant' vs. *waiter* 'who waits'[43]. Accepting polysemy like this thus explains semantic conflict as shown in the *business* vs. *busy-ness* example pointed out in footnote 16.

Pilch also makes a rigid distinction between monolingual and bilingual derivation. Latinate word formation like the one forming CAs is not monolingual derivation in English. Marchand (1969: 6-8) refers to this word type of formation as 'Neo-Latin basis of coining' and he makes a

[43] When the word *waiter* means 'a person who waits', it is usually preceded by such words as *long* or *tide*.

sharp distinction between word formation of this type from 'native basis of coining'. This separation is of the utmost importance in both synchrony and diachrony of English, to which we shall return in 2.6.

2.3.1.3.2.3. Mel'čuk's (1976, 1994, 2000) Approach

Mel'čuk is the first scholar who gives suppletion a rigorous formal definition. As already mentioned, his original definition is: 'the relationship between any linguistic units A and B which meet the following condition: the semiotic distinction between A and B is regular, while the formal distinction between them is not regular.' (Mel'čuk 1976: 50), but he also gives it a rigorous definition based on his Meaning-Text theory in the later versions of his theory (1994, 2000). His revised definition is as follows:[44]

(2.9) Two minimal segmental signs **X** and **Y** of language ℒ [sic] are said ***to be in relations of suppletion <to be suppletive with respect to each other>*** if and only if Conditions 1 and 2 are simultaneously satisfied:

1. The signifiers of **X** and **Y** are not corepresentable.
2. The signifieds of **X** and **Y** are corepresentable and:
   a. either the signifieds 'X' and 'Y' are identical, and then **X** and **Y** are allomorphs of the same morpheme;
   b. or the signifieds 'X' and 'Y' are not identical, and then 'X' and 'Y' are grammatically corepresentable.

(Mel'čuk, 1994: 347)

Apart from technicalities in the definition,[45] Condition 1 (condition on

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[44] The notations used in Mel'čuk (1994) are as follows: **X** (Roman boldface) indicates linguistic signs, and 'X' indicates a signified 'X'.

[45] Mel'čuk defines the notions *representability*, *corepresentability*, and *grammatical corepresentability* as follows: 'A linguistic sign X is representable in terms of signs $\mathbf{Y_1}$, $\mathbf{Y_2}$, ..., $\mathbf{Y_n}$ if and only if its signified is representable in terms of signifieds of $\mathbf{Y_1}$, $\mathbf{Y_2}$, ..., $\mathbf{Y_n}$ and its signifier is representable in terms of the signifiers of $\mathbf{Y_1}$, $\mathbf{Y_2}$, ..., $\mathbf{Y_n}$' (343) 'Linguistic units X and Y are said to be corepresentable if and only if they can both be represented in terms of the same unit Z and perhaps some other units.' (346) "X' and 'Y' are said to be grammatically corepresentable if and only if the semantic differences 'X'-'Z' and 'Y'-'Z', i.e. 'P_1', ..., 'P_m' and 'Q_1', ..., 'Q_n', can be completely represented in terms of grammatical, i.e. inflectional and derivational, meanings of ℒ[sic].' (347)

signifiers) ensures that two forms should be maximally irregular; while Condition 2a bans lexical synonyms and 2b bans lexical hyponymy and lexical pairs with shared semantic components (both, conditions on signifieds).

There are several important points of his works. Firstly, his definition of suppletion explicitly stipulates that it should be a relational notion, not a term for morphological process. This makes a sharp contrast to the former treatments in which suppletion is treated as one of morphological processes together with metathesis, suffixation, prefixation, among others.

Secondly, his Condition 2b explicitly requires certain derivations to be suppletive if they are 'reducible to grammatical meanings' (350). Therefore, CAs are actually suppletive by his definition. This second point is of utmost importance in considering the possibility of suppletion in derivation, so I elaborate on it below. See the following examples given in Mel'čuk (1994: 359):

(2.10) Noun ~ corresponding denominal adjective (= relational adjective):

English

father ~ patern (+*al*) **root ~ radic** (+*al*)

earth ~ terrestr (+*ial*) **sun ~ sol** (+*ar*)

law ~ leg (+*al*) **church ~ ecclesiast** (+*ic*)

Cf. Numerous regular cases such as *equator* +*ial*, *lacun* +*ar*, *capsul* +*ar*, *education* +*al*, *custodi* +*al*, *context* +*ual*, etc.

(Mel'čuk, 1994: 359)

We should bear in mind that the suppletive cases in (2.10) are supported by the existence of numerous 'regular cases'. Actually, what he means by 'grammatical meanings' seems to me a bit puzzling. In Mel'čuk's framework, '[c]orepresentablitiy of linguistic units X and Y means that

one of them can be derived from the other (or both can be derived from a common source) by rules of &' [sic][46] (346) Therefore, the analysis to the effect that those forms in (2.10) are suppletive has to be supported by the existence of the rules of suffixation of *-al*, *-ial*, *-ar*, *-ic*, etc. Obviously, this leads to Dressler's conclusion that *maritime* and *sea* are not suppletive. Although he does not say anything about this conclusion, the reason seems very simple: there is not any morphological rule available which connects them because *-ime* does not count as a suffix in English![47] Therefore, he concludes that no 'grammatical meaning' is involved in the *sea* ~ *maritime* pair based on the nonexistence of rules.

Indeed, I find this rather unfortunate because the *sea* ~ *maritime* pair should be regarded as an example of 'derivational megamorph suppletion' [48] in Mel'čuk's typology—i.e. a suppletive relationship between a morph of a radical morpheme {SEA} and a strong megamorph manifesting the sequence of the morpheme {SEA} and a derivational morpheme (adjective-forming suffix of some sort).[49] It seems that Mel'čuk and Dressler exclude *maritime* only because they both regard rule-based generalisability as more important criterion than semantics.

Thirdly, Mel'čuk establishes a typology of suppletion. He first gives three parameters: (A) inflectional vs. derivational suppletion, (B) radical vs. affixal suppletion, and (C) morph vs. megamorph vs. idiom suppletion. This is surely what nobody has ever done before. However, some of the data shown in his paper do not seem to allow univocal interpretations.

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[46] This might be a trivial matter, but I do not know whether or not the signifieds should be treated as 'linguistic units' in Mel'čuk's framework.

[47] According to OED, *maritime* is analysed as *mari-* 'sea' plus *-itimus*, a superlative-forming suffix in classical Latin.

[48] A *megamorph* is usually known as a 'portmanteau morph'. In Mel'čuk's framework, a portmanteau morph is not a morph because it does not belong to a morpheme. To Mel'čuk, a morpheme is not a sign, but a set of signs; and a morph is a manifestation of the morpheme of which it is an allomorph.

[49] A *strong megamorph* is 'a semantically decomposable but formally indecomposable sign' (Mel'čuk 1994: 344). For example, *am* is a strong megamorph representing {BE}, {PRES, IND}, and {1SG}. The *sea* ~ *maritime* pair is the only one example in my collected data which does not have Latinate suffix. However, OED's etymological information of *maritime* suggests the possibility of analogical formation based on 'confusion of suffixes'.

For example, he treats such pairs as *despise* ~ *contempt*, *think* ~ *opinion* (verb ~ corresponding deverbal noun (= nomen actionis)) as examples of 'derivational radical megamorph suppletion' (363-364), but there are some whose classification is rather dubious—witness *listen* ~ *audit +ion*, *destroy* ~ *destruct* + *ion*, etc. Are these instances of derivational radical suppletion, or just instances of mere lexical relations?

Fourthly, Mel'čuk attracts our attention to the gradable character of suppletion. He observes that the notions such as 'corepresentability', 'grammatical corepresentability' are based on semantic as well as formal regularity, which is essentially gradable. He also suggests the possibility that different researchers arrive at different conclusions. His example is the *peux-* ~ *pouv-* ('[I or we] can') pair from French (1994: 357; 2000: 514-515). If a researcher sees it as regular because of the existence of other examples such as *meux* ~ *mouv*[*-ons*] ('[I or we] move'), *veux* ~ *voul*[*-ons*] ('[I or we] want'), etc., then he or she concludes that it is not suppletive. Otherwise, it is put into the lexicon as suppletive.

Finally, Mel'čuk gives the following typical zones of suppletion:

(2.11) DERIVATIONAL

Syntactic

deverbal noun	denominal adjective	deadjectival adverb (Engl[ish]. **good** ~ **well**)

Semantic

'female of ...'		'inhabitant of ...'
'young of ...'		
'ordinal of ...'	'hypocoristic of ...'	'causative'

INFLECTIONAL

Nominal

number	case [infrequent]	possession

Verbal [most widespread]

aspect tense mood

person/number (of subject and object)

Adjectival/Adverbial

degree

(Mel'čuk, 1994: 389-390)

As to the particular lexemic groups which favour suppletion, Mel'čuk (2000: 519) provides his own list. Nouns in the list include: 'God' (and names of particular gods), human being (e.g. 'human', 'man', 'woman', 'child', 'boy', 'girl'), kinship terms (e.g. 'spouse', 'daughter'), domestic animals (e.g. 'dog', 'horse', 'cow', 'ox'), body parts (e.g. 'eyes', 'heart'), division of time (e.g. 'year', 'month'), objects of everyday life (e.g. 'house', 'tortilla'); verbs include: 'be', 'become', 'have' and action verbs such as 'do', 'see', 'eat', 'say', 'fall', 'hold', 'throw', 'kill', 'die', 'stand', 'sit', 'lie', 'go', and 'come'; adjectives and adverbs which favour suppletion include: 'good', 'bad', 'young', 'old', 'much/many', 'a little/few', and all dimension adjectives; and finally, ordinals ('first' and 'second' and first two or three names of tens) and pronouns tend to be highly suppletive. Dressler (1985b) has already provided an elementary list of this sort, but Mel'čuk's contains far more lexemic groups and is considered an improvement on Dressler's.

2.3.1.3.2.4. Bittner's (1988) *Nachbereich*, Token-Frequency-Based Explanations and Fertig's (1996) Approach

The semantic domains in which suppletion is especially favoured—like those in Mel'čuk's list shown in (2.11) and those pointed out by Dressler (1985b)—are often referred to as 'suppletion domains'. One of the scholars who has developed this line of research is Bittner (1988). Adopting the methodology of Natural Morphology, he established a certain semantically or psychologically definable *Nachbereich* for suppletion ('area' or 'suppletion domain', translated by

Carstairs-McCarthy, 1992: 242). After giving basic verbal concepts such as coming, going, giving, taking, saying, doing, eating, drinking, being born, and dying as instances of his *Nachbereich*, he observes that it is not their high token-frequency but their basic semantics that leads to their special preference to suppletion.

However, as criticised by some scholars, the notion of *Nachbereich* itself is too vague.

Actually, it has often been pointed out that suppletion is typical of high token-frequency items. Nida (1963: 265) notes that there is a strong correlation between the frequency of a form and its general resistance to analogical levelling. Bybee (1985: 119) points out the high-frequency forms are based on the rote learning and this accounts for many irregularities typically found in them. Such a view is also supported by recent statistical studies as well. For example, Lieberman et al. (2007) find that a verb which is 100 times less frequent regularises 10 times as fast.

In this token-frequency-based view, there are roughly two groups of opinions: some scholars—e.g. Singh (1996) and Lass (1990)—say that suppletion is a pure historical artefact and hence totally a marginal, nonfunctional phenomenon, while others—e.g. Werner (1987) and Dressler (1985b)—connect the general tendency of high-frequency items to be short with the high perceptional prominence and conclude that suppletive items are indeed functional in linguistic system.

Fertig (1996) criticises both of the above-mentioned opinions and develops his own theory of suppletion based on Natural Morphology supplemented by Bybee's version of the grammaticalisation theory. His criticism of the suppletion domain (Fertig, 1996: 1072-1074) is based on the methodological inappropriateness of defining the notion itself, the possibility of analogical levelling among the items in the suppletion

domain, and the possibility of irregularities occurring outside the items in the suppletion domain. Fertig finally observes that Bittner is right in pointing out that some sort of perceived 'closeness' of a concept and suppletion are correlated, but that he concludes that Bittner fails to grasp what lies at the base of such interrelationship.

As to the token-frequency-based approach, Fertig points out that suppletive forms are not always short—for example, witness the comparative of German *gut* 'good' is *besser*—and hence it is not economical at all. He also points out the possibility of analogical levelling among high-frequency items—e.g. German bisyllabic suppletive *wurde* 'became' (infinitive: *werden*) has replaced the monosyllabic non-suppletive strong regular preterite *ward*.

Fertig's contribution is that he supplements Natural Morphology with insights from Bybee's grammaticalisation approach. He first observes that the degree of fusion between a stem and an inflectional affix of the verbal category is based on Bybee's (1985: 24) semantic-relevance hierarchy, which is shown in (2.12) (summarised by Fertig 1996: 1074)):[50]

(2.12) valence > voice > aspect > tense > mood > number agreement > person agreement > gender agreement

In the standard version of Natural Morphology (i.e. not supplemented by the grammaticalisation theory) like that of Mayerthaler's (1987), the German verb *lernen* 'to learn' (a weak verb) is more iconic than *singen* 'to sing' (a strong verb) because the stem part *lern-* is always the same through its preterite paradigm, whereas the stem *sing-* alternates with *sang-* in the preterite paradigm of *singen*. Bittner, however, concludes that based on Bybee's semantic-relevance hierarchy, *singen* is the more iconic because the *sing-/sang-* alternation signals the fusion of the

[50] Bybee sees all grammatical structures as a byproduct of language use and change. Hence, Fertig concludes that not only grammatical structures but also iconicity is also their byproduct.

category tense, which is the more relevant category to the verb, with the stem than person or number agreement. This means that regular weak verbs are less iconic than strong verbs. He also connects this view to the fusional character of grammatical categories in inflectional languages in general and ascribes the suppletive character of German verb *sein* 'to be' to its highly grammatical character.

Indeed, this means that the more grammaticalised a lexeme is, the more suppletive it tends to be, which actually seems to be the case. He also suggests the existence of 'category-specific' suppletion based on the verb meaning 'eating' which is not so much grammaticalised in many languages but displaying suppletion.

Since Bittner and Fertig's main concern is with inflectional morphology, in which suppletively realised lexemes are not uncommon, their works do not discuss the possibility of derivational paradigms. However, in terms of meaning-based approach, their works are a step forward in that they take into consideration the semantic aspects of the lexemes in considering suppletion.

2.3.2. Summary and Further Problems

So far, I have reviewed previous studies on suppletion and lexicology. Before giving my own opinion on this topic, let me briefly summarise what seems to be important in the previous discussions.

First, I would like to emphasise the fact that the study of suppletion is something of a very recent development in the American tradition of linguistics. This is because American linguistics generally has been under the strong orientation of forms rather than the meaning. In American structural linguistics, as is well known, semantic aspects of language have generally been a field of marginal interest. Also in the generative paradigm, irregular phenomena like suppletion have often been thought to be simply the matter of the lexicon and hence have not

attracted much attention. European tradition, especially, German lexicologist tradition, on the other hand, has had constant interest in the semantics of lexemes. Therefore, much of the literature relevant to the notion of suppletion is produced in German.

Secondly, the previous discussions suggest that there is a strong necessity to introduce a meaning-based approach to morphology. Actually, we have been too uncritically accustomed to the idea that the lexicon is a collection of ad hoc, unsystematic lexical items—so much so that it does not deserve serious systematic consideration. However, to be stored in the lexicon does not necessarily mean that lexemes are not at all worth studying. Even as to the semantics aspects of lexemes, the field theorists have contributed greatly to both morphology and lexicology.

Indeed, many basic concepts of the form-based approach are not as solid as they seem. For example, take *-ly* suffixation. We tend to think that if an adjective takes *-ly*, whole meanings of the adjective can be adverbialised. However, a little consideration is enough to make us realise that simple compositionality does not apply for these adverbs. In fact what we often find is: either (A) lexicalisation has happened which makes *-ly* adverbs morphosemantically opaque (e.g. sentential adverbs such as *surprisingly*, and *obviously*); or (B) only certain meanings of an adjective can be selected for this adverbialisation (e.g. *fitly* does not mean 'healthily', but 'appropriately').[51] Therefore, I think that some sort of meaning-based approach is necessary at least to supplement form-based approach.

Thirdly, the field theory has to be refined in the study of suppletion. For example, associative meanings based on which semantic fields are established are of two kinds—one is paradigmatic and the other is syntagmatic. Field theorists tend to mix them in their treatment of

[51] If we assume all lexemes to be monosemous, then, (B) may not be a serious problem. Actually, in lexicography, CIDE adopts the 'one word one meaning' policy. However, there still is a problem of defining the notion of monosemy.

semantic fields, but they should be kept separate in order to study suppletion.

Finally, recent development of Natural Morphology and the grammaticalisation theory suggests that suppletion should not be treated only in the study of linguistic competence. We have to take into consideration linguistic performance as well as various extramorphological factors, such as styles, linguistic diachrony, and semiotic functions.

2.3.3. Suppletion in Inflection and Derivation

Based on the previous discussions, I would like to present my own view in this section. I propose that the term suppletion should not be limited to apply to inflection only and we should recognise that it should apply in the realm of derivational morphology also.

Although scholars unanimously agree that suppletive phenomena are common in inflection, they are normally not willing to apply the term suppletion to derivation. What are the differences between the suppletive phenomena in inflection and the (alleged) suppletive phenomena in derivation?

First of all, we should note that the notion of suppletion presupposes the existence of neat paradigms, which are typically observed in inflection, rather than in derivation. (We shall see how the notion of paradigm is defined in 2.5.) As has been often pointed out by many morphologists, since inflection is what is relevant to syntax, it has to be applied obligatorily, without exception;[52] thus, the distribution of inflectional features is essentially rule-based, which leads to the rigid nature of paradigms in inflection. Given this neatness of the paradigmaticity in inflection, even if an irregular form—which cannot be related to other

[52] See S. R. Anderson (1988: 167-172; 1992: 74-85, *et passim*), for example. Haspelmath (2002: 70-83) observes that 'syntactic relevance' and 'obligatoriness' are two of the three all-or-nothing properties which can be used to distinguish between derivation and inflection.

forms in terms of the form—happens to fill in the slot in a given inflectional paradigm, it can be easily connected to the other word forms thanks to the existence of the paradigm. Note, for example, that no speakers of English have problem in identifying *went* and *was/were* as past verb forms of GO and BE, respectively. This is because the paradigmaticity of the base-past pairs of English verb forms is inflectional and hence very robust. Apparent counterexamples are the existence of so-called 'defective verbs' such as modal verbs like *must*, *can*, *shall*, *will*, etc., which we have seen in 2.2.1. However, these verbs are highly grammaticalised, abstract lexemes, which are distinct from other genuine lexical verbs.[53]

Sometimes, particular inflectional operations such as *s*-suffixation for plural nouns are suppressed by the existence of other operations such as vowel mutation, or *en*-suffixation (e.g. *children*, *oxen*, etc.); but this does not damage the overall across-the-board nature of plural inflection.[54] Indeed, this nature makes some scholars think that inflection is a 'realisation' of syntactically motivated attribute a particular lexeme, rather than a 'derivation' (here, 'derivation' means a way of building or forming a complex word on the basis of a base) of any kind.[55] When we speak of a noun *oxen* for example, it seems more appropriate to say, '*Oxen* is a realisation of the plural of *ox* with *en*-suffixation', rather than to say, '*Oxen* is actually derived by *en*-suffixation and used as plural.' It is definitely more reasonable to consider inflection not actually as word formation, but as a sort of realisational mechanism of syntactically relevant features by way of morphological operations.

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[53] Note also that in the inflectional paradigm of English some verb forms like *stridden* (past-participle of *stride*) are rare. But I think this can be considered a mere 'accidental gap', and it does not impair the overall rigid paradigmaticity of English verbs.

[54] I am aware that *pluralia tantum* and *singularia tantum* constitute apparent counterexamples. However, though these two groups of nouns do not inflect themselves, they have to be treated either as being singular or as plural for the purpose of syntax. Indeed, this is the basic argument for distinguishing the countability of nouns (inherent number properties of nouns) from how the category of number is used in terms of syntax (agreement). Therefore, I think we can still say that the across-the-board nature of inflection is robust.

[55] See Haspelmath (2002: 268-269), where the term 'derivation' is shown to have two different usages.

Derivation, on the other hand, is basically a lexical matter (here, 'lexical' means 'related to the lexicon'); thus, there are many cases in which perfect filling of the paradigm slots cannot be observed, or in which some semantic conditions are operative. For example, see *-ness* suffixation, which is often characterised as one of the most productive derivational rules in English. A brief consideration, however, reveals that apart from its apparent productivity, there are some semantic constraints on this rule.[56]

Secondly, if suppletion has something to do with the economical nature of the form, as is assumed by Fertig (1998: 1070), Werner (1989: 40-43), and Ronneberger-Sibold (1980: 145-147), among others; then, why are there many cases of (alleged) derivational suppletion in which suppletive forms are far longer than the regular forms? Indeed, CAs are a case in point. Due to the polysyllabic nature of Latinate words in general, CAs are almost always longer than their BNs, as is clearly shown by the following examples: *ecclesiastical* (~ *church*), *optic* (~ *eye*), *piscine* (~ *fish*), *alimentary* (~ *food*), *arboreal* (~ *tree*) etc. This marks a sharp contrast to suppletion in inflection, in which the suppletive forms are predominantly shorter than the hypothetical nonsuppletive forms.

Thirdly, alleged cases of suppletion in derivation are often matters of sociolinguistic or stylistic concern, whereas in inflection suppletive phenomena are usually found not to be so. As is to be shown later, CAs are normally found in highly elevated style and are not used in everyday conversation. Mel'čuk's (1994: 362) examples of English suppletive deverbal nouns like *contempt* (~ *despise*), *opinion* (~ *think*) have different stylistic values from *despising*, *despite*; *thinking*, *thought*, respectively. In inflection, on other hand, suppletive forms like *went*, *was*, *were*, etc. are not stylistic variants of their regular counterparts.

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[56]See Riddle (1985) for semantic constraints on *-ness* suffixation. Interestingly, *-ness* can sometimes attach to pronouns (*nothingness*) and adverbs (*thereness*) and even to phrasal units (*matter-of-factness*).

Fourthly, suppletive forms in inflection come out automatically without resorting to the association based on the paradigm, whereas (alleged) suppletive forms in derivation typically result from association based on the paradigm. Pinker (1994: 146) observes that irregular inflections are stored in the mental dictionary as roots or stems, whereas regular inflections are actually not stored but created by rules. Thus, in the case of *went*, *mice*, etc., these forms are stored in the dictionary and no rules can handle them; they should be learned separately from other regular formations. However, in the case of CAs, they are typically memorised together with their BNs—witness such pairs as *church-ecclesiastical* and *spring-vernal* listed in vocabulary expanding books. Hence, their formation principle seems fundamentally different from suppletion in inflection. [57]

The above discussions apparently suggest that notion of suppletion should be limited to apply to inflection only. However, if we base the notion of suppletion on the notion of the paradigm, then suppletion can be regarded as general 'lexical slot-filling' mechanism in the given paradigm and hence, we can extend the notion itself to apply for derivation as well. In 2.5, we shall pursue this possibility concerning CAs. Before that, we shall give a concise review of the studies on morphosemantic transparency of the lexeme in the tradition of lexicology in Europe.

2.4. Collateral Adjectives and Studies on Morphosemantic Transparency

2.4.1. On the Morphosemantic Transparency of the Lexeme

Although Natural Morphologists prefer to use the term morphotactic

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[57] Dressler (1985b: 106-107) points out that when children learn numbers, they do not learn the cardinal-ordinal pairs based on paradigmatic association, i.e. not by memorising such pairs as *one-first*, *two-second*, and *three-third*. Children learn to count the series of cardinals and ordinals separately. This suggests that suppletive ordinals are not formed in the same way as inflectional suppletive forms such as *went* (~ *go*). It is evident that CAs are memorised together with their BNs, rather than with other CAs, and hence they are different from the case of ordinals.

transparency, linguists in the Saussurean tradition prefer to talk about morphosemantic transparency of the lexeme. This is probably because they assume that form-based approaches and meaning-based approaches should go hand in hand.

2.4.2. Ullmann (1957, 1962) and his *Morphological Motivation* for the Analysability of Lexemes

Ullmann (1962) devotes one whole chapter (Chapter 4) to the problem of transparency and opaqueness of words. According to him, there are three types of motivation for the transparency (i.e. analysability) of words. The first is **phonetic motivation** seen in onomatopoeia. A well-known example is names of the cuckoo in various languages—witness French *coucou*, Spanish *cuclillo*, Italian *cuculo*, Rumanian *cucu*, Latin *cuculus*, German *Kuckuck*, and so on. The second is **morphological motivation** seen in such morpheme combinations as 'free morpheme plus affix' combinations (e.g. *preach-er*, *speak-er*, etc.) and compounds (e.g. *penholder*, *penknife*, etc.). Finally, the third motivation is based on metaphorical or metonymic meanings of words such as *the cloth* meaning the clergy, or *silk* for a Queen's Counsel, and is called **semantic motivation**.

What he calls morphological motivation, i.e. the second motivation above, corresponds to what I call morphosemantic transparency or opaqueness of words. Actually, Ullmann himself limits his discussion only to morphological motivation because 'it is the most clear-cut and least subjective of the three types, and certain broad tendencies stand out very clearly even though they may not be statistically formulable [sic].' (106)

His main interest in his book lies in the study of the structure of Modern French in comparison with English and German; and he points out that French is in general more morphosemantically opaque than English and German. German is the most morphosemantically transparent of the three and English is located between them in the scale. See the

following lists of words in which he makes comparison between German, English, and French:

(2.13) Compounds

German	English	French
Schlittschuh ('sledge-shoe')	skate	patin
Schnittlauch ('cut-leek')	chive	cive
Fingerhut ('finger-hat')	thimble	dé
Handschuh ('hand-shoe')	glove	gant
Erdteil ('earth-part')	continent	continent
Wasserleitung ('water-conduit')	aqueduct	aqueduc
Kehlkopf ('throat-head')	larynx	larynx
Nilpferd ('Nile-horse')	hippopotamus	hippopotame

Ullmann (1962: 106-107)

(2.14) Derivation

German	English	French
Gesetz—gesetzlich	law—legal	loi—légal
Kirche—kirchlich	church—ecclesiastical	église—ecclésiastique
Bischof—bischöflich	bishop—episcopal	évêque—épiscopal
Stadt—städtisch	town—urban	ville—urbain
Mund—mündlich	mouth—oral	bouche—oral
Sprache—sprachlich	language—linguistic	langue—linguistique

Ullmann (1962: 109)

If we turn to English CAs, it should be remembered that Ullmann is aware of their special status in English morphology. Actually, his following description shows that he acknowledges the existence of some paradigmaticity between CAs and their BNs: 'Some of these words also have regular derivatives like *churchy*, *mouthy*, French *loyal* and *vilain* 'nasty, ugly', but these have specialized meanings and overtones whereas the learned terms are purely descriptive and closely parallel to the noun.' (Ullmann, 1962: 108, footnote 2)

In one of his articles (1957), Ullmann evaluates the roles that structural semantics plays in historical semantics and concludes that it 'will open up new vistas and lead to a critical reexamination of many old problems.' (303) Especially interesting is his conclusion that French has changed from being morphosemantically transparent to opaque because of the following three reasons: (A) rapid and radical sound changes (e.g. Latin *pes, pedem* 'foot' becoming totally opaque in French *pied* 'foot', *pion* 'junior master; pawn', *empêcher* 'to prevent, to hinder', etc.), (B) impoverished nature of derivation—as is witnessed by the replacements of transparent derivatives by classical terms (e.g. *murison* 'ripeness' (~ *mûr* 'ripe') replaced by *maturité*), and (C) the adoption of large numbers of Latinisms and Hellenisms (e.g. *insulaire* 'insular' (~ *île* 'island'), *maternel* 'maternal' (~ *mere* 'mother'), etc.).[58] As he observes in his later work (1962: 110-115), the same things can be said about the history of English. Note, however, that there is a remarkable difference between English and French in that the former has native lexical stratum which is essentially Germanic. To this we shall return in 2.6.

2.4.3. Dissociation, Consociation, and Bisociation

German lexicologists often observe that words are *consociated* if linked by transparent morphology and that they are *dissociated* if morphologically isolated. However, what does this 'transparent morphological linking' mean?

We have seen in 2.4.2 that Ullmann discusses three types of motivation for the transparency (i.e. analysability) of words. Evidently, Ullmann's 'motivation' comes from Saussure's *Cours*. See the following citation from Saussure's *Cours*:

> Le principe fondamental de l'arbitraire du signe n'empêche pas de distinguer dans chaque langue ce qui est radicalement arbitraire,

[58] Note that these are French CAs.

c'est-à-dire immotivé, de ce qui ne l'est que relativement. Une partie seulement des signes est absolument arbitraire; chez d'autres intervient un phénomène qui permet de reconnaître des degrés dans l'arbitraire sans le supprimer: *le signe peut être relativement motivé.*

Ainsi *vingt* est immotivé, mais *dix-neuf* ne l'est pas au même degré, parce qu'il évoque les termes dont il se compose et d'autres qui lui sont associés, par exemple *dix-neuf*, *vingt-neuf*, *dix-huit*, *soixante-dix*, etc.; pris séparétement, *dix* et *neuf* sont sur le même pied que *vingt*, mais *dix-neuf* présente un cas de motivation relative. Il en est de même pour *poirier*, qui rappelle le mot simple *poire* et dont le suffixe *-ier* fait penser à *cerisier*, *pommier*, etc.; pour *frêne*, *chêne*, etc., rien de semblable. Comparez encore *berger*, complètement immotivé, et *vacher*, relativement motive; de même les couples *geôle* et *cachot*, *hache* et *couperet*, *concierge* et *portier*, *jadis* et *autrefois*, *souvent* et *fréquemment*, *aveugle* et *boîteux*, *sourd* et *bossu*, *second* et *deuxième*, all[emand]. *Laub* et fr[ançais]. *feuillage*, fr[ançais]. *métier* et all[emand]. *Handwerk*. [...]

(Saussure, 1916 [*Cours*]: 180-181)

In the French tradition of lexicology, scholars tend to use the term *motivation* to mean what German lexicologists mean by consociation. See Lehmann and Martin Berthet (2000: 105-107), for example.

As to the notion of dissociation, Leisi (1974) makes the following observation:

Die Wörter *oral* und *tripod* gehören also nicht einer etymologischen (laut- und sinn-verwandten) Familie an, sondern sie stehen allein, gleichsam asozial da. Eine Entwicklung, die in die Richtung geht, die Wörter asozial zu machen, sowie den durch sie erreichten Zustand nennen wir im folgenden Dissoziation.

Leisi's definition of *dissociation* is 'being isolated without belonging to any etymological (that is, phonetically, or semantically related) family' [my translation]. This definition is rather informal in its character because it contains both etymological and synchronic aspects which are tactically parenthesised in the definition. He introduces the term *hard words* for words of Latin or Greek origin which cause problems for those who have not enough knowledge about these classical languages.[59]

With regard to motivation, Finkenstaedt and Wolff's (1973: 161) terminology is threefold. Note that their terminological distinction is based on etymology and the speaker's etymological knowledge. According to them, an item is called *isolated* 'if there is no etymologically related word in the English lexicon and if there are no compounds or derivatives ...' (161) (e.g. *bungalow*). As to consociation, they say an item is called *consociated* 'if it is etymologically related to another item in an evident way.' (161) Finally, an item is *dissociated* 'if it has a semantic but no etymological relationship with another item.' (161) Thus, they observe that *father* and *paternal* are not consociate because their etymological relationship is only known to the philologist and not to the representative average speaker of English. They are now completely dissociated words in Present-day English.

Görlach (1997: 110) tries to define the terms consociation and dissociation by saying that consociation means words are 'linked by transparent morphology', while dissociation means they are 'morphologically isolated'. Obviously, what he means by 'morphologically transparent or isolated' is based on the speaker's ability to relate two forms which share a common meaning.

McArthur, ed. (1992: 131-132) coins the term *bisociation* to apply to the

[59] Lipka (2002: 14-18) has a good summary of Leisi (1974).

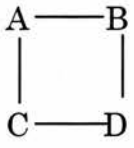
situation in which pairs of words occur with similar meanings, one member of each pair being native to that language (such as everyday English *sight*), the other being a loanword from an influential foreign source (such as *vision*, a loanword from Latin). CAs are a paradigm example of bisociation.

2.5. A Paradigm-Based Approach to Collateral Adjectives—My View

2.5.1. The Paradigmaticity Hierarchy

With Dressler, Pilch, and others, I am of the opinion that it is important to introduce a paradigm-based approach into derivation. As we have seen, the notion of paradigm can be useful in describing morphology because it can show us how semantics and forms are related. As to the definition of paradigm, I propose the following one (shown in (2.16)) based on Cruse's (1986) notion of proportional series given in (2.15) (= (2.5)).

(2.15)



A is to B as C is to D
B is to A as D is to C
A is to C as B is to D
C is to A as D is to B

(Cruse, 1986: 118-9)

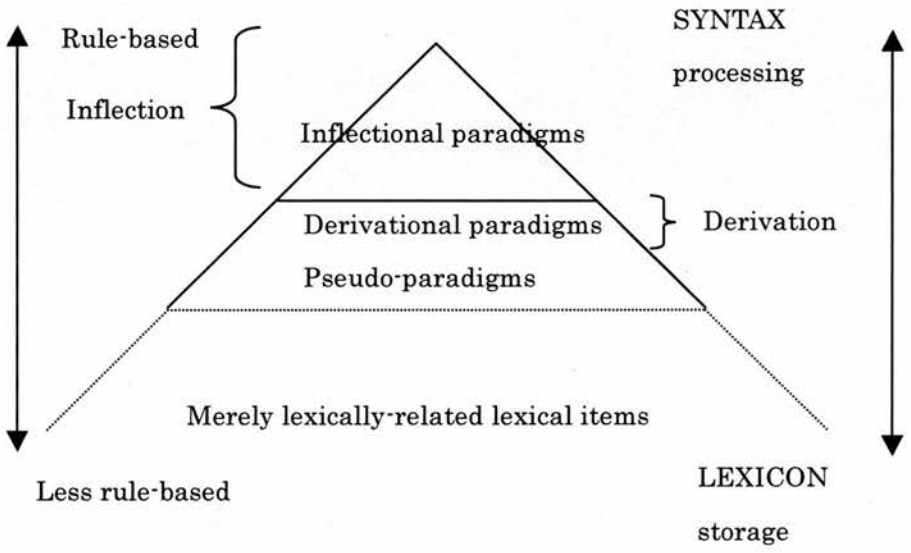
(2.16) A paradigm is composed of an etic grid recognisable *a priori* in our world, which is based on Cruse's (1986) proportional series.

Note that starting from a single 'cell', proportional series can be 'extended along both axes simultaneously'. (Cruse, 1986: 120)

Given this definition, I further assume that there is a cline between ideal, exemplary inflectional paradigms and mere semantically related groups

of items. See the following for the general organisation of morphology in terms of paradigmaticity:

(2.17) Organisation of morphology in terms of paradigmaticity (the Paradigmaticity Hierarchy):



Note that the higher we go the more ideal paradigms we get—ideal in terms of having both semantic and formal bases.

2.5.2. Inflectional Paradigms

First of all, I assume that there is a qualitative difference between inflection and derivation in English in terms of syntactic relevance, which is why there is a solid line between inflection and derivation in (2.17).

As we have seen in 2.1.1, the term suppletion applies best to inflectional paradigms. This is because inflectional paradigms are motivated by the grammaticalisation of the etic grids in (2.17)—they are located in the area of morphology which is relevant to syntax.

In Koshiishi (2002), I outlined how inflectional languages make use of inflectional categories to mark dependency or constituency. Natural language has to mark dependency or constituency in some ways and

inflectional languages do this by putting a tag to the lexeme based on inflectional categories. My conclusion was: these categories are the results of the grammaticalisation of paradigmaticity found in inflectional languages. Note that inflectional categories such as number, gender, and person used to be based on the existence of paradigmaticity found in our conceptual world.

In this sense, my approach is very similar to Fertig's (1998) approach to suppletion. We have seen in 2.3.1.3.2.4, that the tack taken by him in his work is to revise Natural Morphology, adopting the interesting results of the grammaticalisation framework. Therefore, my approach can be interpreted as a kind of grammaticalisation of paradigmaticity based on semantic fields. This is because the higher we go in the hierarchy, the more grammatically relevant we find a particular paradigm to be. At the top of the paradigmaticity scale is inflection, the most grammaticalised area in morphology. The following is a partial example of a verbal inflectional paradigm (the pairs are composed of infinitives (INFs) and past forms (PSTs)):

(2.18)

	INF	PST
a.	call	call-ed
	serve	serve-d
	study	studi-ed
	occupy	occupi-ed
	like	like-d
	lick	lick-ed
b.	want	want-ed
	mend	mend-ed
c.	think	thought
	catch	caught

d.	go	went
	be	was, were

Note that those listed in (2.18a) are the most morphotactically transparent and rule-based, whereas the further you go down in (2.18), the less morphotactically transparent the relations between INFs and PSTs become. However, the across-the-board nature of inflection ensures its perfect paradigmaticity.

2.5.3. Derivational Paradigms

Derivational paradigms are the part of derivational morphology where etic grids are conspicuous, although they are not exploited syntactically as number or gender. We have already seen their examples in (2.7) and (2.8), making a brief review of Pilch's (1985) approach. Other examples include kinship terms, and domestic animal terms. What is characteristic about them is that here we can get something similar to what Carstairs (1987: 31) proposes as the Inflection Parsimony Hypothesis, forbidding the coexistence in one linguistic variety of two or more inflected forms which are exactly synonymous in all respects.[60] However, although there are 'slot-filling' mechanisms observed here, they are different from suppletive phenomena observed in inflection. There may be a gap as can be shown in the example of the inhabitant name of the toponym *Edinburgh*, but there is always some compensatory device sought for—as is witnessed by such a nonce word as *Edinburghian*, or such a makeshift phrase as *an Edinburgh person*. Once some form occupies that gap, however, no other form can stand totally synonymous

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[60] According to Carstairs (1987: 31), the Inflectional Parsimony Hypothesis is stipulated as follows:

> Even when there is more than one inflexional realisation available for a given combination of morphosyntactic properties, each stem must select only one of these realisations (unless, where two or more are selected, the overt contrast is associated with some semantic or stylistic function.)

Note that this is a natural extension of Pinker's (1984: 177) Unique Entry Principle, which also guarantees that in general each word will have one and only one form for each relevant morphological category. See Giegerich (2001) for further literature on similar principles.

with that form; alleged cases of synonymity turn out to be always spurious in some sense, as we have seen in Pilch's 'satellite words' such as *Kiwi* for *New Zealander*, *Buckeyes* for *Ohioans*.

2.5.4. Pseudo-Paradigms

I assume that there is a certain area of morphology in which no perfectly regular etic grid is recognisable although some sort of quasi-regular grid-like structures can still be assumed. I call such structures *pseudo-paradigms*. In addition, I further assume that CAs belong to one of such pseudo-paradigms. There are two types of pseudo-paradigms: one is form-based and the other is meaning-based.

2.5.4.1. Form-Based Pseudo-Paradigms—Primitive Phonesthemes, Word Plays, and Rhymes

It is well known that the so-called phonestheme, sound symbolism, is found in all languages. In the case of English, we have /fl-/ for 'something flying or floating' (e.g. *flee*, *flow*, *fly*); /gl-/ for 'something related to light' (e.g. *glass*, *gleam*, *glisten*, *glimmer*); /-ʌmp/ for 'falling (of some heavy entity)' (e.g. *plump*, *jump*, *thump*); etc. Note that these phonesthemes function as constants in their paradigms.

Interestingly, a certain degree of formal similarity of this kind sometimes leads to some grouping of words, although the relationship between sound and meaning is still very primitive.

Of all the form-based pseudo-paradigms, the commonest type is what Horiuchi (1999: 27) refers to as 'convergence of endings'. According to him, endings of different origins tend to make up a group of similar words in terms of their phonetic similarities by the power of association. Especially important in this regard is the rhyme principle functioning as important source of word formation. His examples include *tint* (< *tinct*, through the association with *print*, *mint*, and perhaps with *taint*, *paint*) and *mog* 'mouse (Northern English), cow (dialectal)' (through the

association with other *-og/-ag* names such as *hog*, *stag*, *dog*, and *frog*).

What is characteristic about these word groups is that generalisations about their relationship are generally too weak to be productive word-formation processes. However, this sort of generalisation is always operating, and when it comes to word-plays, or headlines, we sometimes find very effective use of form-based pseudo-paradigms—witness examples like *doom and gloom*; *King Hussein was known for pluck and luck*; *Stanley Kubrick*; *film maverick* (Horiuchi 1999: 27); *News at Toon* (a commercial message from Cartoon Network), among others. Indeed, this is where we can find interplay between phonology, morphology, semantics, and pragmatics. The theorisation of these phenomena awaits some future research.

Note that these form-based pseudo-paradigms are what Weisgerber (1963) refers to as *gestaltbezogene Forschung*. See 2.3.1.2.1 for his version of lexicology.

2.5.4.2. Meaning-Based Pseudo-Paradigms

Secondly, we have pseudo-paradigms that are meaning-based. Derivational paradigms we have seen in 2.5.3 are also meaning-based, but they are based on rigid etic grids with rather ideal slot-filling mechanisms, whereas the meaning-based pseudo-paradigms we are treating here are not. There might be some lexical overlapping, or sometimes gaps; and many of them belong to Pilch's lexical paradigms. Therefore, polysemy and the existence of satellite words are widely observed in this type of pseudo-paradigms.

I assume that the BN-RAdj pairs in English are a good example of a meaning-based pseudo-paradigm. We shall look more closely at this particular paradigm in what follows.

2.5.4.2.1. Pseudo-Paradigmaticity Between Nouns and Relational Adjectives

Firstly, the semantic relationship between BNs and RAdjs can be thought of as a part of a very general relationship between nouns and their corresponding attributive adjective counterparts. To put it crudely, whenever there is a noun, there is its RAdj counterpart. This seems a natural conclusion because as we shall see in Chapter 3, although the RAdj is an adjective in terms of its formal properties, it essentially denotes the weak referentiality of an entity and hence displays many similarities to a full-fledged noun. Since, as many scholars such as Geach (1962), Gupta (1980), and Baker (2003) suggest, the decisive property of the noun is considered its referential property, I assume that the above observation that every noun has its corresponding slot for its RAdj counterpart is a robust one.

Actually, many linguists have pointed out the similarities between nouns and adjectives—not only in terms of their usage but also in terms of their grammatical characteristics. We are not going to discuss details here, since Chapter 3 is devoted to such discussions. But Jespersen (1924: Chapter 5), for example, deals with the similarities of these two word classes and concludes that there are not such wide differences between them. According to him, nouns (his 'substantives') and adjectives are different only in their degrees of semantic specificity. Nouns are highly specific in their meanings, while adjectives are less specific. Note that the traditional terminological distinction between *conjugation* (for verb word-forms) and *declension* (for noun and adjective word-forms) also supports the grouping of nouns and adjectives together.

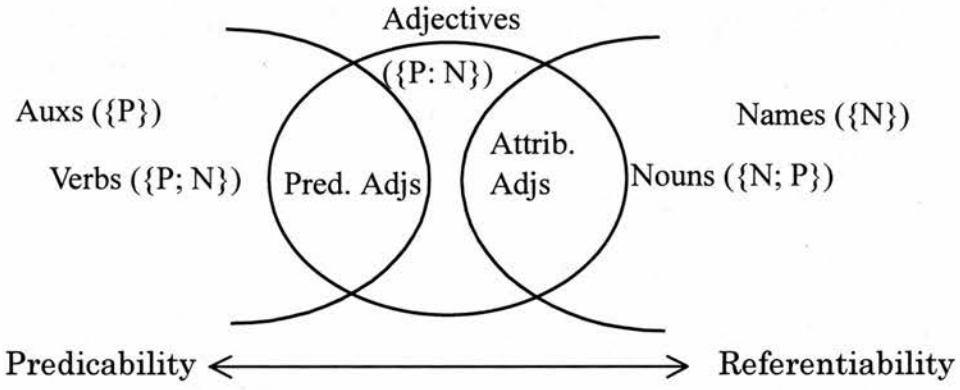
These facts all seem to suggest that adjectives are closer to nouns than to verbs in a crude sense. Probably, this is the intuition based on which we talk about 'adjectival usage' of nouns like *stone* as in *stone wall*.[61] On the other hand, note that we do not normally regard the cases of denominal verb conversion (e.g. *lunch* as in *let's lunch out*, etc.) as 'verbal

[61] In some dictionaries, this adjectival usage is shown in usage notes. For example, according to OALD7, *stone* is 'often used before nouns or in compounds' (**stone** *noun* 1).

usage' of nouns.

As to the relations between nouns and RAdjs, which are a subcategory of adjectives, I would like to assume further that there is a paradigm-like relation observable between them. The basic idea is that RAdjs are different from nouns merely in terms of their function as modifiers to the following nouns. Following the lead of Levi (1978), I assume that RAdjs are essentially no different from nouns, except that they are specialised for attributive, modifying use. To adopt J. M. Anderson's (1997) framework of notional grammar, my assumption concerning the categories noun, adjective, and verb can be expressed as something like the following: [62]

(2.19) Syntactic categories aligned on the predicability-referentiability scale:



In (2.19), adjectives are assumed to be {P: N} and to be placed between verbs {P; N} and nouns {N; P}. If we assume a second-order categories, attributive adjectives are probably {(N; P); (P: N)} and predicative adjectives are {(P; N); (P: N)}.

What then motivates this particular paradigmaticity held between nouns

[62] In J. M. Anderson's framework, syntactic categories are interpreted as complexes of simplex features. 'P' and 'N' mean 'predicability' and 'referentiability', respectively. {A} means that feature A appears alone in the categorical representation, {A, B} means that features A and B combine, {A; B} means that feature A governs feature B, and {A: B} means that features A and B are mutually dependent. See J. M. Anderson (1997) for more details.

and RAdjs? In my opinion, the following facts constitute arguments for this particular paradigmaticity: firstly, RAdjs are often grouped together with N1s in N1 + N2 combinations, which are known to be almost fully productive.[63] Note that this productivity of N1s can compare with that of inflection. Secondly, the semantic relations between BNs and RAdjs are often expressed by highly grammaticalised (morpho-) syntactic devices such as inflection (e.g. genitive marking) or particles (e.g. *of*-phrases), which are completely productive in nature.[64]

Note that paradigmaticity is not observed between other syntactic categories in (2.19). Verbs are unique in having various valency relations. Conversions to or from verbs involve various types of valency changing; hence it is difficult to assume constant semantic relations based on which paradigmaticity can be defined. Between attributive and predicative adjectives, paradigmaticity is not observed because of the existence of 'attributive-only' adjectives (e.g. *late*, *present*, etc. as in *the late/present president*) and 'predicative-only' adjectives (e.g. *alive*, *asleep*, etc.).

As is already pointed out by Levi (1978), CAs are so-called 'attributive-only' (i.e. her 'nonpredicating') adjectives and have very close relationship with nouns. If we assume something similar to Levi's CNs, we can say that every noun has its own RAdj counterpart—whether it is in the form of an N1 (e.g. *stone* in *stone wall*), or a non-suppletive RAdj (e.g. *presidential* in *presidential election*), or a CA (e.g. *vernal* in *vernal equinox*).

2.5.4.2.2. Incomplete Slot-Filling in Pseudo-Paradigms

Note, however, that how English fills the slot provided by the grid is far from perfect, which is the second characteristic of this particular

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[63] See Zimmer (1971), Downing (1977), Levi (1978: 241), among others.

[64] In this connection, typical definitions adopted in dictionaries are interesting. For example, OED's typical definition of CAs is something like 'of or belonging to X'. For example, *paternal* is defined as '[o]f or belonging to father or fathers;...' (**paternal** *a.* 1.a.).

pseudo-paradigm. One of the reasons can surely be ascribed to the fact that the semantic relations between nouns and CAs are not always uniform. It is true that CAs are adjectival counterparts to the BNs, but they sometimes develop only a subset of the meanings of the BNs. Take *father-paternal* pair for example. *Father* can mean 'god', or 'priest', but this meaning is not normally reflected on the CA counterpart, *paternal.*

Also problematic is the lack of uniform meaning applicable to all CAs. We cannot assume any single meaning shared by them. See below:

(2.20)[65]

BNs	CAs	Meanings
father	paternal	· Relating to or characteristic of a father or fatherhood; fatherly. · Received or inherited from a father:... · Related through one's father:...
spring	vernal	· Of, relating to, or occurring in the spring. · Characteristic of or resembling spring. · Fresh and young; youthful.
arm	brachial	· Of, relating to, or resembling the arm or a similar or homologous part, such as the foreleg, wing, or other forelimb of a vertebrate: ...
beach	littoral	· Of or on a shore, especially a seashore: ...
day	diurnal	· Relating to or occurring in a 24-hour period; daily. · Occurring or active during the daytime rather than at night: ... · *Botany.* Opening during daylight hours and closing at night.

[65] Meanings listed in the table are taken from AHD3.

We could generalise the above meanings and say that although CAs meanings are something like 'relating to X', there are other special meanings as well. Indeed, what happens here is semantic shift from RAdjs to *bona fide* qualitative adjectives (QAdjs). This situation presents a striking contrast to inflectional paradigms, where we can assume a completely uniform meaning relation between the items in the paradigms. I would like to return to this problem of semantics in 3.3.3.

Note that this special meaning-based pseudo-paradigmaticity does not hold only between nouns and their RAdj counterparts. See the following examples in which another meaning-based pseudo-paradigm is held between nouns and their 'phobia nouns' (nouns meaning 'fear of a specific thing'):

(2.21)

X	X-phobia
air	anemophobia
cats	ailurophobia, felinophobia, galeophobia
clouds	nephophobia
corpses	necrophobia
fish	ichthyophobia

In the above examples, it is clearly shown that in the 'phobia nouns' special Greek or Latin roots are used to combine with *-phobia*.

Interestingly, just as CAs, these 'phobia nouns' are impossible to be connected to their corresponding nouns. This is why there are many special onomasiological dictionaries (not only on the actual market but also on the web!) for these 'phobia nouns'

2.5.4.3. Merely Lexically-Related Lexical Items[66]

Merely lexically-related lexical items are located at the bottom of the Paradigmaticity Hierarchy in (2.17). This is where various sorts of

[66] 'Lexically-related' in this context means 'being related in the lexicon'.

meaning relations can be found, such as (near-) synonymy (*pail-bucket*), antonymy (*hot-cold*), and hyponymy (*dog-animal*). Note that the boundary between these items and items in pseudo-paradigms cannot be clearly defined, which is why the dividing line in (2.17) is a dotted line.

2.6. The Status of CAs in English Morphology

2.6.1. A Brief History of English Morphology

It is well known that the vocabulary of Present-day English (PDE) consists of different etymological layers. This enables English speakers to make use of a 'treasure house' of synonyms, so to speak. As we shall see in Chapters 4 and 5, this partially explains why English has cherished a long tradition of publishing good dictionaries.

According to Kastovsky (1989), the history of English word-formation can be regarded as a kind of liberation from root-based to word-based morphology. Kastovsky's definitions of the stem and the root are as follows:

> Stem: a bound, word-class specific lexeme representation stripped of any inflectional endings, but potentially containing derivational affixes or stem-formatives, which determine the inflectional category of the lexeme in question, [...]
>
> Root: the element that is left over when all derivational, stem-forming and inflectional elements are stripped away. Such roots can either be affiliated to a particular word-class, or they can be word-class neutral. In the latter case the word-class affiliation is added by a word-formative process, [...]
>
> Kastovsky (1999: 43)

For the purpose of illustrating these terminological distinctions, let us take Latin *equus* 'horse' for example, since, as Lass (1994: 125) observes,

the original details of the thematic types may no longer be visible in Germanic. In *equus*, *equ* means 'horse', *-u-* is a thematic vowel, and *-s* is an inflectional ending expressing nominative singular. The root plus thematic vowel forms a stem, so *equu-* is the stem in this example.

In Old English (OE), there is a residual stratum of root-based inflection and derivation instanced mainly by ablaut. However, this is gradually obscured by stem-based morphology in general. Even in OE, some examples of word-based morphology also already exist, which finally wins out in Middle English (ME) and Modern English (ModE). In what follows, we shall see this morphological history more in detail.

2.6.1.1. Old English (OE)

Kastovsky (1989) characterises OE morphology as a transition from root-based to word-based morphology. In the case of verb morphology, ablaut is still recognisable in OE strong verbs, which can be regarded as a residue of originally Germanic, root-based patterns. So far as OE weak verbs, weak nouns, and strong feminine nouns are concerned, however, OE morphology is already very much stem-based (e.g. *feorm-ian*, *gum-a*, *luf-u*). Interestingly, *a*-stem masculine nouns (*cyning*), neuter nouns (*word*), and adjectives (*god*) have no inflectional endings in nominative/accusative singular, which can function as base forms with word status. Therefore, we can see the beginning of the shift from stem-based to word-based morphology even in OE.[67]

2.6.1.2. Middle English (ME) and Later

The history of English word-formation in ME is basically a continuation of this shift from stem-based to word-based morphology. However, Kastovsky draws our attention to the following two groups of exceptions, both of which are related to borrowing: (A) words derived on non-native, 'Neo-Latin basis' (Marchand, 1969); and (B) words based on so-called

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[67] Kastovsky (1989: 162) observes that the OE system-defining structural property in the sense of Wurzel (1984) is still stem-based morphology.

combining forms.

The former group (A) constitutes the central part of the Latinate vocabulary stratum. Words belonging to this layer are generally formed on the basis of stems, rather than words. See the following examples:

(2.22) science ~ scientist, divine ~ divinity, admit ~ admission, etc.

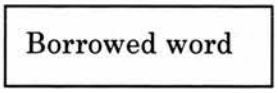
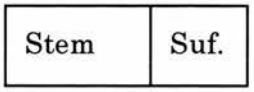
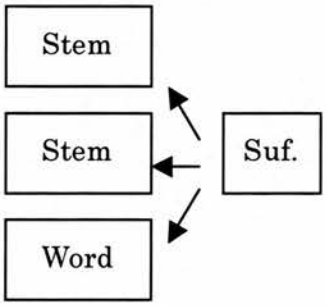
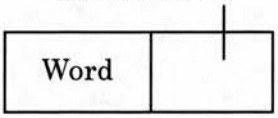
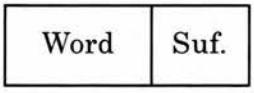
As to (B), we have already seen some of them briefly in 2.5.4.2.2. Combining forms such as *astrology*, *astronomy*, *astronaut*, *cosmology*, *cosmography*, and *philology* are generally borrowed from Greek and/or Latin. Note that the morphology of these languages is known to have both root- and stem-based aspects.

Indeed, what seems to be interesting is Kastovsky's conclusion that these two groups of words are not native in origin. Here what we see is the completely innovative principle of word-formation caused by 'wholesale borrowing' (Marchand, 1969: 130) from non-native Romance languages and Greek.

2.6.2. Latinate Vocabulary and its Special Status in English Morphology

Due to this wholesale borrowing from Romance languages, the morphology of English is largely split into two layers: one the native layer which shifts to word-based morphology, the other the Latinate vocabulary layer which sticks to root- or stem-based morphology. What is interesting is the fact that not only the results (i.e. loanwords) but also the word-formation principles are brought into English. In Koshiishi (1995, 1999), I showed that the following is the general schema of how Latinate morphology takes root in the soil of English morphology:

(2.23) Latinate vs. native morphology in English history:

Latinate morphology	Native morphology
(i)  - Borrowed as an unanalysable, monomorphemic word. - Morphological analysis not yet given. (ii)  - A suffix abstracted as a result of morphological analysis based on abductive interpretation. [68] - The suffix becoming stylistically distinctive from others. - The suffix affixed to other Latinate roots/stems. (iii)  - The suffix affixed even to native roots/stems or words.	(I) Suffix, or phonologically reduced word  - A suffix or an element having some word-like status existing in the speaker's mind from the first. (II)  - The suffix still retaining its suffixal status as in (I). - Or, the word-like element becoming a new suffix. - The word status of the base normally kept intact.

(2.23) shows how Latinate loanwords naturalised into English.

[68] Following Dressler (1985b: 332) who observes that the average length of the words in the world's language is one to three syllables, I assume that the words having more than three syllables are potentially susceptible of this kind of abductive morphological interpretation

According to Burnley (1992: 445-446), there are three stages of loanword naturalisation, which corresponds to the three stages in the 'Latinate morphology' column of (2.23). Firstly, the word is adopted in English with its affixes and assimilated into the grammatical system of English. Then, some sort of morphological analysis occurs, and eventually there comes a period when the word is stylistically differentiated from the other vocabularies. Note that at this second stage, relevant word formation processes are still perceived as something extraneous to English, which made them difficult to apply freely to native bases. Finally, there comes a stage, in which the word formation processes are perceived to be completely naturalised and hence can be applied to bases of any origin.

Let us illustrate this above naturalisation process with *-ity*, one of the Latinate noun-forming suffixes. According to OED, the first word with this suffix is *chastity* (1225). Incidentally, its corresponding adjective *chaste* is recorded in the same year. Marchand (1969: 313) observes that the adjective and nouns were borrowed independently and when the noun was introduced, it was perceived as monomorphemic. Note that there is no derivational path established between *chaste* and *chastity*. This corresponds to Burnley's first stage.

Then, as the number of *-ity* words became larger, speakers gradually started to analyse them morphologically. Then, the 'Neo-Latin basis of coining' (Marchand, 1996: 6-8) starts to be formed. However, this coining has not yet been freely applied to native words. This is Burnley's second stage.

Finally, the morphological process in question starts to apply to native words as well as Latinate words. In the case of *-ity* words, this final stage is the beginning of the 18th century—witness *oddity* (1711), *queerity* (1713), etc.

Görlach (1997: 110) observes that many words of Latinate origin are what

Leisi calls dissociated words. However, he also suggests that as Latinate vocabulary becomes part of English morphology, they become consociated words because many of them are transparent by that time. This is exactly what I have shown in (2.23); abduction-based Latinate morphology now constitutes a part of English morphology.

The framework of Lexical Phonology/Morphology (LP/M) captures this special status of Latinate morphology by assuming that English phonology is split into at least two strata: one for Latinate words, the other for native words. The basic strategy adopted in LP/M is to impose various constraints on the phonological and morphological processes assigned to each stratum.

It would be quite nice if everything were perfectly exception-free. However, as Giegerich (1999) observes, the situation is quite complicated because even in the Latinate stratum we see some belong to both stem-based and word-based morphology.[69] Take *-ant* for example, we have stem-based *lubricant*, *stimulant*, *applicant*, etc. as well as word-based *pollutant*, *disinfectant*, *coolant*, etc. Note that the last example is formed on a stem which is Germanic in origin! Therefore, so far as PDE is concerned, an etymology-based analysis, or an affix-driven analysis surely causes problems, which makes Giegerich (1999) adopt principles of base-driven stratification in his framework of LP/M.

However, in terms of etymological layers of vocabulary, I think the following general pattern pointed out by Goldsmith (1990: 247, 273) is still observable: Latinate morphology in general can be regarded as a sort of patching-up device in order to make the word look more like a monomorphemic word, whereas native morphology is just a concatenation of morphemes. This is rightly expected given the fact that Latinate vocabulary is basically composed of loanwords (many of which used to be

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[69] Giegerich's (1999) terminology is different from Kastovsky's (1985) in that he adopts 'root-based', rather than 'stem-based' word formation. Here, I follow Kastovsky's lead.

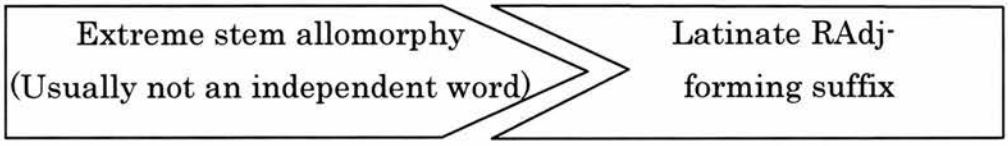
monomorphemic), and given the observation made by Kastovsky that Latinate morphology is stem-based and is totally outside the realm of native English word-formation processes.

2.6.3. Collateral Adjectives and Their Morphological Composition

By definition, CAs belong to the layers of Latinate morphology discussed in 2.6.2. Accordingly, they belong to the lexis of Neo-Latin' basis of word formation, whose dominant pattern is that of stem-based morphology.

All CAs have the following morphological composition:[70]

(2.24)



sol	-ar
ver	(n)-al
ecclesiastic	-al
fel	-ine
bov	-ine
cardi	-ac

NB: Divided blocks in the above diagram mean that the stem and the suffix are not free but bound forms.

Two points should be noted. Firstly, as we have seen in (24), Latinate suffixes are predominantly vowel-initial. Actually, this characteristic is noted by such works as Dressler (1987: 123), Koshiishi (1995: 69), and Dalton-Puffer (1997: 59).

Such an observation is very important if one remembers the reanalysis-based origin of Latinate suffixes in general. This means that

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[70] Given that most CAs end with what may be referred to as an adjective-forming suffix (e.g. *-ine* in *bovine, feline*), some analysts might prefer the term 'radical stem allmorphy' instead of 'suppletion'.

the word-formation of these Latinate words can be regarded essentially as a 'centrifugal, polarising, and dissimilative' phenomenon—witness that these affixes result from human abduction.[71] At first, they were not there, but they just appear thanks to the result of human reinterpretation. Native word formation, in contrast, is fundamentally a 'centripetal and assimilative' phenomenon. Therefore, many of the native suffixes used to be independent words which have been gradually weakened and finally lost their independent lexical status and have become suffixes.

Dressler (1985a: 343) observes that Present-Day English displays 'a very weird typological mix in morphology'. According to him, '[i]n a nutshell, it combines weakly inflecting type inflectional morphology (including the tendency towards monosyllabic [Germanic] roots and lack of morphological gender and paradigm distinction) with strongly inflecting (fusional) type derivation morphology in its large Latinate lexical stratum, rather agglutinating Germanic derivational morphology, and polysynthetic aspects of compounding.' I have found that these observations characterise English morphology very aptly. And our discussions surely support his second (strongly inflecting type) and third (rather agglutinating type) observations.[72]

Secondly, although almost all CAs follow this morphological pattern, there is one which does not and it is *maritime*. As we have seen in 2.3.1.3.2.1 and 2.3.1.3.2.3, this CA is exceptional in that there is no *-ime* suffix in English. Therefore, Dressler (1985) and Mel'čuk (1994) do not include this example in their examples of suppletion.

2.7. Summary of the Present Chapter

Let me summarise the discussions of the present chapter.

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[71] See Donegan and Stampe (1979) for the division between 'centrifugal' and 'dissimilative' phenomena and 'centripetal' and 'assimilative' phenomena. Though their main concern is in phonology, this division can be applied to other components as well.

[72] See Beard (1980: 273ff.) for the Germanic preference for compounds over other types of derivational processes such as suffixation.

Firstly, we have seen that the notion of the morpheme as building-block-like entity—which is typically seen in the Post-Bloomfieldian American structuralism—leads to the unfavourable bias against meaning-based approaches in the study of the lexis of English. In order to neutralise such a bias, it is concluded that some sort of meaning-based approaches should be introduced.

Secondly, we have made an extensive review of the meaning-based approaches to morphology. Especially, the problem of suppletion turns out to offer a good touchstone for the morphological theory.

Thirdly, we have seen the problem of morphosemantic transparency and opaqueness in detail. Note that there is a continuum or a scale of morphosemantic transparency observed. We made a review of Ullmann's work in special reference to Saussurean dichotomy of motivatedness.

Fourthly, I have provided my own meaning-based approach to the problem of CAs. I based my analysis on the Paradigmaticity Hierarchy which itself is based on Cruse's (1986) 'proportional series'. It was shown that several different degrees and kinds of paradigmaticity are observed in this hierarchy and in the case of CAs, pseudo-paradigmaticity observed between RAdjs and their BNs is shown to function as a base for the suppletive relations between CAs and their BNs.

Finally, CAs' morphological status in English was considered with special reference to their position in the English morphology. First, a brief review of the history of English morphology was presented. Then, it was shown that English morphology can best be regarded as a transition from root- or stem-based morphology to word-based morphology. CAs were shown to belong to the so-called 'Neo-Latin' (Marchand, 1969: 6-8) basis of word formation. CAs' implications to the stratal views of English morphology such as Lexical Morphology were also considered with special

reference to this historical background.

Chapter 3
Syntax and Semantics of Relational Adjectives

3.1. Introduction

This chapter deals with the syntax and semantics of relational adjectives (RAdjs). CAs constitute a proper subset of RAdjs. In Chapter 1, I defined CAs as 'Latinate suppletive RAdjs'. Chapter 2 has dealt with CAs' morphological aspects. We have seen that they can best be analysed as 'suppletive' adjectives morphologically connected to their BNs. In the present chapter, our main concern shifts from morphology to syntax and semantics. Among the questions to be addressed and answered in this chapter are the following:

- What are the syntactic and semantic properties of RAdjs?
- What are the properties that make RAdjs distinct from qualitative adjectives (QAdjs)[73]?
- It is often pointed out that RAdj + N combinations are similar to N1 + N2 combinations. Is it true and if so, what are the similarities and differences?
- What are the differences between the RAdj, the possessives (POSS), the nominal modifier (N1), and the prepositional phrase (PP)?
- What causes the ambiguities of such expressions as *criminal lawyer* and *good teacher*?

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[73] QAdjs means adjectives which express a quality of an entity. They are what Huddleston and Pullum (2002: 554) refer to as *ascriptive adjectives*. According to Ferris (1993: 24), ascription is 'the case where the adjective conveys a property which is valid for the entity instantiated by the noun'. Association, in contrast, expresses a property which 'does not apply directly to the denotation of the nominal, but rather to some entity associated with it' (Huddleston and Pullum 2002: 556).

- Why have many examples of RAdjs, including many CAs, undergone semantic shift to become QAdjs?

To make the content of this chapter more concrete, we shall consider the following example: We all know that the noun *heat* has very close lexical relationship with the adjective *hot*—so much so that people normally assume some sort of unproductive but appreciable morphological relation between them. In dictionaries, *heat* is defined as 'the quality of being hot or warm, or the temperature of something' (CALD), while *hot* is defined as 'having high temperature' (CALD).

In the above example, the adjective *hot* is a QAdj because (A) it expresses the quality of having high temperature; and (B) it has all the syntactic properties coming along with its meaning—such as (i) predicability (*this water is hot*), (ii) modifiability by *very* (*very hot water*), (iii) gradability (*this water is hotter than that*), and (iv) nominalisability (*the hotness of the water*).

However, note that English has another adjective closely related to both of them, which is *thermal*. In Chapter 2, we have seen how admitting suppletion in derivational morphology enables us to capture the relationship between this word and the noun *heat*. The meaning of this word can be presented simply as 'connected with heat' (CALD); therefore, it is a paradigm example of a RAdj.[74] Note that as we have seen in Chapter 2, *thermal* cannot be connected with the noun *heat* in terms of the form. Actually, it can be regarded as a Latinate suppletive RAdj; therefore, it is a paradigm example of a CA.

Interestingly, *thermal* lacks all the syntactic properties *hot* has—as is witnessed by the following examples: (i) non-predicability (**this water is thermal*), (ii) non-modifiability by *very* (**very thermal energy*), (iii)

[74] Based on lexicographical facts, ten Hacken (1994: 90) observes that RAdjs' typical definition is of the type 'of, or relating to the noun.'

gradability (**this energy is more thermal than that one*), and (iv) non-nominalisability (**the thermality/thermalness of this energy*).

This chapter deals with RAdjs such as *thermal* above. The structure of the chapter is as follows: First in 3.2, the relevant syntactic properties of RAdjs are considered. We shall first review how the adjectival category has been defined in the literature. Then, we shall consider the further subclassification of the adjective. Through the discussions, it is clearly shown that RAdjs have what is referred to as 'weak' type of referentiality. In 3.3, on the other hand, semantic properties of RAdjs are considered. The main objective of that section is twofold: one is to provide a reasonable account for the semantics of RAdj + N combinations by adopting the framework of lexical semantics, and the other is to explain the mechanism of the semantic shift from RAdjs to QAdjs. Finally, 3.4 summarises the discussions in this chapter.

However, a word of caution is in order. Since syntax and semantics are tightly interwoven, it sometimes happens that we cannot strictly distinguish syntactic phenomena from semantic phenomena. Also, in some cases, semantic factors have syntactic effects or vice versa. Therefore, we should keep in mind that some overlap of descriptions may be unavoidable through our discussion.

3.2. Syntactic Properties of Relational Adjectives

3.2.1. On the Category Adjective

CAs are a proper subset of RAdjs, which, in their turn, are a proper subset of adjectives. Before we consider RAdjs, however, we shall consider what the adjectival category actually is. Our discussion shows that central members of the adjectival category are QAdjs and that RAdjs lack various properties central adjectives have. We shall start our discussion by reviewing the basic grammatical properties of the adjective.

3.2.1.1. Basic Grammatical Properties of the Adjective

3.2.1.1.1. Previous Work on the Category Adjective

The adjective had long been considered the category to denote some properties of things denoted by the noun. Crystal (1985: 7-8), for example, observes: [the adjective is] 'a term used in the GRAMMATICAL classification of WORDS to refer to the main set of items which specify the attributes of NOUNS.' This conforms to what is generally believed about this category: the adjective is a describer of nominal expressions. Lexicographic descriptions of this word are something similar to this—e.g. 'a word that describes a noun or pronoun' (LDOCE4).

Lyons (1977: 439) adopts the conventional view that '[...] the attributive adjective is the modifier of the noun with which it is combined, and the adverb is the modifier of the verb or adjective with which it is combined, in endocentric expressions.' However, '[t]here are many subclasses of adverbs and some adjectives for which this statement is definitely not valid; and there are other adverbs and adjectives for which its validity is questionable. In so far as the generalization that has just been made does hold, however, it explains the traditional terms 'adjective' and 'adverb': the adjective is typically the modifier of a noun and the adverb is typically the modifier of a verb or adjective.' (Lyons, 1977: 439)

Actually, just as Lyons points out, there are various subtypes in the adjectival category, so much so that any simple definition of the category faces some trouble. In what follows, we shall see the basic grammatical properties of that category.

3.2.1.1.2. Adjectives vs. Nouns in Terms of Generality and Specificity

In medieval times, the parts of speech used to be distinguished according to whether a particular group of words behaves similarly in terms of their inflectional morphology. Therefore, the distinction between the noun and the adjective was not generally noticed by grammarians. Note that the

term 'declension' covers both nominal and adjectival inflectional morphology and the term 'conjugation' covers verbal inflectional morphology.

In modern times, Jespersen is one of the linguists interested in distinguishing the two categories. He starts by posing the following question: What differentiates 'substantives' (i.e. our nouns) from adjectives is their specificity in meaning? His answer is: The two categories are fundamentally the same except that the adjective has generality whereas nouns have more specificity. The following is the citation from Jespersen (1924) on their difference:

> [...] [O]n the whole substantives are more special than adjectives, they are applicable to fewer objects than adjectives, in the parlance of logicians, the extension of a substantive is less, and its intension is greater than that of an adjective. The adjective indicates and singles out one quality, one distinguishing mark, but each substantive suggests, to whoever understands it, many distinguishing features by which he recognizes the person or thing in person.' (75)

Note that he bases his argument on what seems to be sublexical semantic decomposition of features:

> [...] substantives are broadly distinguished as having a more special signification, and adjectives as having a more general signification, because the former connote the possession of a complexity of qualities, and the latter the possession of one single quality. (81)

As Raskin and Nirenberg (1995: 6) point out, Wierzbicka (1988) pushes this position forward, saying:

> [...] nouns do differ in meaning from adjectives, not just core nouns from core adjectives, but, probably, all nouns from all adjectives, and the two classes differ in a systematic, largely predictable manner. In suggesting that nouns differ from adjectives on semantic grounds I don't mean that nouns designate, primarily, concrete things that can be seen and touched. After all, core adjectives such as *black*, *white*, *big*, *small*, *long* or *new*, too, designate things that can be seen and touched The real semantic difference between nouns and adjectives lies not in the range, or kind, of referents, but in the kind of semantic structure. (466)

So far, I have just cited two scholars' opinions about adjectives. They both try to capture the categorial difference between adjectives and nouns based on the semantic generality vs. specificity scale. Later in 3.2.1.2.3, following the lead of Baker (2003), we shall see that nouns must satisfy the criterion of identity and have the index-bearing property. Pre-empting the conclusion there, what this means is that nouns are always required to be situationally specific (often with the aid of determiners), whereas adjectives are not. I think that this is one of the reasons why nouns are higher in their semantic specificity than adjectives.

3.2.1.1.3. Adjectives Defined as an Intermediate Category between Nouns and Verbs

Some scholars regard the adjective as an intermediate category between the noun and the verb. Firstly, there is a line of argument from the time-stability of categories, according to which nouns encode time-stable entities, whereas verbs encode time-unstable entities. Adjectives are situated right in-between, encoding both noun-like entities, which are time-stable; and verb-like entities, which are time-unstable. Among such scholars are Bolinger (1967), Givón (1970, 1984), Thompson (1988), and Frawley (1992). Bolinger (1967) bases his distinction between attribution and predication on this time-stability argument.

Secondly, there is another argument to the same effect from the presence or non-presence of referential and predicative element in meanings. According to this, nouns have high referentiality but no predicativity in their lexical semantics, while verbs have only predicativity but not referentiality. Adjectives are just in-between. Researchers such as J. M. Anderson (1997) and Koshiishi (2002) assume that adjectives have both predicativity and referentiality, while others like Baker (2003) assume that they have neither of them. In 3.2.1.2.3, we shall see how adjectives are analysed in his theory; and in 3.2.5, we shall review such a line of thought with special reference to sublexical lexical decomposition.

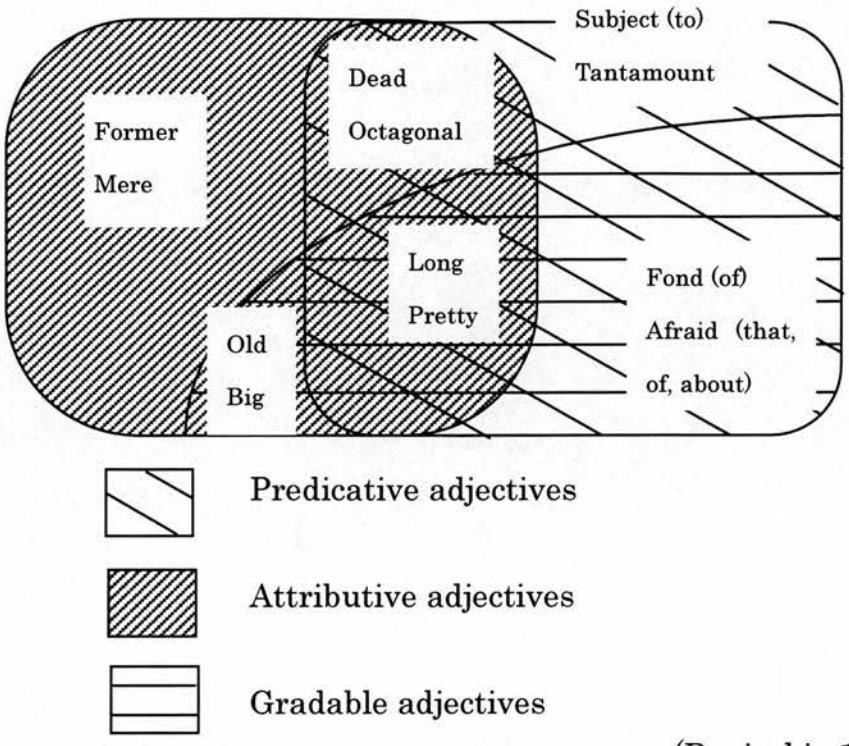
3.2.1.1.4. Adjectives and Gradability

If we turn our attention to semantics, we have the opposition of gradable vs. non-gradable adjectives. According to Rusiecki (1985: 3), adjectives are gradable if they can be substituted for *A* in the following schemata:

(3.1) *A*er (or: more *A*) than
as *A* as
less *A* than
the *A*est (or: most *A*) of
very *A*

The prototypical adjectives are gradable. The relation between gradable, attributive, and predicative adjectives can be illustrated as follows:

(3.2)



(Rusiecki, 1985: 4)

According to Rusiecki (1985), the majority of attributive-only adjectives are non-gradable, as is witnessed by *former*, *mere*, etc. However, there are some attributive-only adjectives which are gradable such as *old* and *big* as in *an old friend* (*old* meaning 'long familiar') and *a big eater*. Though the majority of 'predicative-only' adjectives are gradable (e.g. *fond (of)*, *afraid (that, of, about)*), there are some predicative-only adjectives which are not gradable (e.g. *subject (to)*, *tantamount (to)*).

Huddleston and Pullum (2002: 531) observe that the notion of gradability should be applied to uses or meanings of adjectives rather than to adjectives as lexemes. See the following examples:

(3.3)	NON-GRADABLE SENSE	GRADABLE SENSE
	the *public* highway	a very *public* quarrel
	Christian martyrs	not very *Christian* behaviour
	a *British* passport	He sounds very *British*.
	The door was *open*.	You haven't been very *open* with me.

(Huddleston and Pullum, 2002: 531 [italics mine])

Note that some of the gradability differences can be ascribed to the RAdj vs. QAdj distinction, as we shall see in 3.3.1.5.

We should bear in mind that the notion of gradability does not solely apply to adjectives. Examples in (3.4) show that it applies to adverbs, some nouns, verbs and even prepositional phrases as well as adjectives:

(3.4) a. Adverbs:
John talked *faster* than Tom. Mary runs by far the *fastest.*

b. Nouns:
Susan's performance last night was a great *success.* She earns more *money* than before.

c. Verbs:
John *loves* Fran very much. John *likes* Fran as much as he likes his son.

d. Prepositional phrases:
The ornament of that restaurant is very *over the top.*

The above discussion shows that gradability is a semantic notion applying cross-categorically to words of different parts of speech.

3.2.1.1.5. Adjectives, Attribution, and Predication

Traditionally, adjectives have often been characterised as a group of words which can modify nouns directly, or as something which can be used after the copulative verb to express the quality of the subject. The former is referred to as *attribution*, whereas the latter is called *predication.*

Some scholars like Croft (1991) and Bhat (1994), among others, regard the attribution as the defining characteristic of adjectives. As is known, neither verbs nor nouns have such a characteristic—as is witnessed by **a [shine]$_V$ coin* and **a [genius]$_N$ woman* (Baker, 2003: 191). Nevertheless,

there are some 'predicative-only' adjectives such as *asleep* and *ready* (**an asleep lady*, **a ready man*), which obviously contradict such a view. There is another source of argument against such a view. As Baker (2003: 195) suggests, statistical studies such as Thompson (1988: 174) and Hengeveld (1992: 59) show that almost 70 percent of adjectives are used predicatively, whereas only around 30 percent are used attributively. This suggests that to build a theory of adjectives on the basis of their attributive use is wrong.

There is also the other group of scholars who consider predication to be the defining characteristics of the adjective. In early transformational accounts such as Smith (1961) and Levi (1978), attribution used to be derived via reduction of relative clauses having predicative adjectives. However, it is well known that there are so-called 'attributive-only' adjectives such as *late* as in *the late president* and *former* as in *the former prime minister*, which defy such an analysis.

The above facts and discussions have shown that neither attribution nor predication can be adopted as the decisive criterion for the adjective. This line of thinking is supported by J. M. Anderson (1997: 46) and Baker (2003: 16), among others.

3.2.1.2. Adjectival Taxonomies

3.2.1.2.1. Huddleston and Pullum (2002)

Huddleston and Pullum (2002) point out that there are three main functional properties of adjectives: namely, attributive, predicative complement, and postpositive.[75] **Attributive adjectives** are 'those functioning as pre-head internal dependent in the structure of NP' (528) (e.g. *my <u>new</u> book*). **Predicative complements** are 'dependents in clause structure, licensed by particular verbs, such as intransitive *be* and

[75] Although personally, I am not happy with this use of the term 'functional' here—my personal preference is 'distributional'— I will continue to use it in this section.

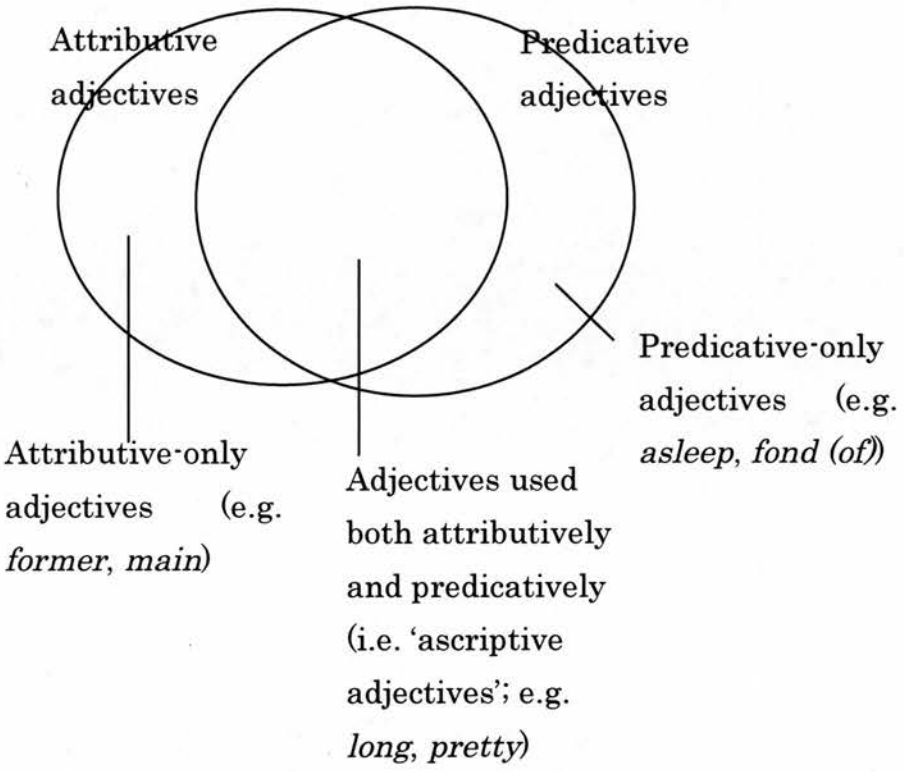
seem or transitive *find* [...]' (528) (e.g. *this book is new*); and **postpositive adjectives** 'function as post-head internal modifier in NP structure.' (528) (e.g. *something new*). Of all the three functions, postpositive adjectives are far less frequent than the other two. Although they admit three further adjectival functions (**predeterminer** (e.g. *such a nuisance*), **fused modifier-head** (e.g. *the rich* 'rich people'), and **predicative adjunct** (e.g. *Furious, he stormed out of the room*), all of them can be subsumed to the above-mentioned three main functions.

Ordinary adjectives can be used both as attributive modifiers and predicates with the same sense, as is witnessed by *new* in the above examples.[76] However, there are some which are used only as attributive modifiers (e.g. *main subject*), and some which are used only as predicates (e.g. *the baby is asleep*). The former are known as 'attributive-only' adjectives, while the latter 'predicative-only' adjectives.

Ignoring postpositional adjectives and other minor functions for the moment, adjectives can be classified according to their syntactic functions as shown below:

[76] Huddleston and Pullum (2002: 554) refer to them as *ascriptive adjectives.*

(3.5) Attributive adjectives and predicative adjectives



3.2.1.2.2. Quirk et al. (1985) and Yasui et al. (1974)

Quirk et al. (1985: 402-403) point out the following four criteria for adjectives:

(3.6) Four Criteria for Adjectives (Quirk et al., 1985: 402-403)

a. Occurrence in attributive position.
b. Occurrence in predicative position.
c. Pre-modifiability by the intensifier *very*.
d. Comparability (Ability to take comparative and superlative forms).

Note that the first three criteria in (3.6) are syntactic, whereas the last one is morphological and semantic in nature.

Quirk et al., however, observe soon afterwards (403-405) that not all the words which are traditionally categorised as adjectives satisfy all of the

four criteria in (6). Such adjectives as *hungry* and *happy* satisfy all of the above criteria, while such adjectives as *mere*, *utter*, *awake*, and *asleep* do not. They call the former 'central adjectives' and the latter 'peripheral adjectives':

(3.7) Central vs. peripheral adjectives (Quirk et al., 1985: 402-404)

	(A)	(B)	(C)	(D)	
a. hungry	+	+	+	+	central adjective
b. infinite	+	+	–	–	central adjective
c. old[77]	+	–	+	+	peripheral adjective
d. afraid	?	+	+	+	peripheral adjective
e. utter	+	–	–	–	peripheral adjective
f. asleep	–	+	–	–	peripheral adjective
g. soon	–	–	+	+	adverb
h. abroad	–	–	–	–	adverb

(A) = attributive use (B)= predicative use after the copula *seem*[78]
(C) = premodification by *very* (D) = comparison

Note that they regard (A) and (B) as the most important criteria; thereby *afraid*, though it passes the criteria (B), (C), and (D), is peripheral, while *infinite*, which satisfies only the first two, is central.

Quirk et al. (1985: 434-436) also state that the following three semantic properties are important in considering semantic sub-classification of adjectives:

(3.8) Three semantic properties of adjectives (Quirk et al., 1985: 434-436)

a. Stative/dynamic—as illustrated by the distinction between *he is* <u>*tall*</u> (stative) and *he is being* <u>*careful*</u> (dynamic), with the structure *N is being* ___ serving as a diagnostic.

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[77] *Old* in this table appears in such a sentence as *Susan is an* <u>*old*</u> *friend.*

[78] Note that as Baker (2003: 196) suggests, *seem* selects only APs as its complement—not NPs. Therefore, they consider it better to use *seem* rather than *be.*

b. Gradable/nongradable—as illustrated by the distinction between *tall* (gradable) and *atomic* (nongradable).
c. Inherent/noninherent—as illustrated by *a firm handshake* (inherent) vs. *a firm friend* (noninherent), diagnosed by the nominalisability test: *the firmness of the handshake* vs. **the firmness of the friend.*

Firstly, as to the stative/dynamic division, we should keep in mind the fact that not all adjectives can be classified according to this division—namely, it does not apply for attributive-only adjectives. According to Yasui et al. (1974: 113), this division depends on the controllability of the state a given adjective expresses. If it is controllable, it is dynamic, while if it is not it is stative. Of the two, stative adjectives are the unmarked option. Yasui et al. (1974: 113) gives the following additional tests for the dynamicity of the adjective:

(3.9) a. Possibility to occur in the imperative sentence:
Stative adjectives: *Be rich. / *Be tall. / *Be buxom.
Dynamic adjectives: Be ambitious. /Be careful. /Don't be foolish.
b. Possibility to occur in the complement of such verb as *persuade*:
Stative adjectives: *I persuaded John to be tall/asleep.
Dynamic adjectives: I persuaded John to be careful/polite.
c. Possibility to occur in the following structure:
Stative adjectives: *He was told to be tall.
Dynamic adjectives: He was told to be careful.

(Yasui et al., 1974: 113)

Note that this semantic division applies not only to adjectives but also to verbs and nouns. In the case of verbs, *remain*, *seem*, *know*, etc. are stative; whereas such verbs as *fall*, *become*, and *learn* are dynamic. As to nouns, *hero*, *fool*, etc. are stative; whereas *author*, *poet*, *effort*, etc. are dynamic. Dynamic verbs and static nouns are the unmarked options.

Since we have treated gradability in 3.2.1.1.4, we shall go on to the inherent/noninherent division. Inherent adjectives are those adjectives which can impose a certain limit on some inherent properties of the referent of the head noun. Take *old* in *an old person.* In this example, *old* is an inherent adjective because it puts a certain limitation on the age of the person, which is one of the inherent properties of the referent of the *person.* On the other hand, *old* in *he is an old friend of mine* is different in that it does not mean that the friend of that person is an old person. In this example, it is evident that the adjective *old* is a noninherent adjective.

Yasui et al. (1974: 134) propose the following diagnosis for the inherent adjectives: In the Det + A + N_1 structure, if the same referent can be expressed by the Det + A + N_2 structure where N_2 is a 'superordinate' (or hypernym) of N_1, then the A can be regarded as an inherent adjective. Therefore, in *a heavy smoker* and *distant relatives*, *heavy* and *distant* are examples of noninherent adjectives because they do not mean 'a heavy person' or 'distant persons' (Note that *person* is a superordinate of both *smoker* and *relative.*). On the other hand, in *an English teacher*[79] and *an American father*, *English* and *American* are examples of inherent adjectives because they mean 'an English/American person' in both examples.

Yasui et al. (1974: 135) gives the following table to show the relationship between the three semantic features, [± stative], [± gradable], and [± inherent]:

[79] This phrase must be pronounced with phrasal accent, not with unity accent.

(3.10)[80]

stative	gradable	inherent	
+	+	+	tall (man)
+	+	–	new (friend)
–	+	+	polite
+	–	+	British (man)
+	±	–	asleep
+	–	–	regional
–	–	+	(nonexistent)
*	–	–	utter (fool)
*	–	+	silken

(Yasui et al., 1974: 135)

Note that the feature [± stative] applies only to adjectives which have predicative function, whereas the features [±gradable] and [±inherent] apply to all adjectives.

We should remember that RAdjs constitute a very special subset in the adjectival taxonomy in the sense that (i) they only have attributive function in the sense of Huddleston and Pullum (2002), (ii) they are 'peripheral adjectives' in Quirk et al.'s (1985) terminology because they lack gradability and the modifiability by *very*, and (iii) the feature [± stative] is irrelevant, as is pointed out by Yasui et al. (1974).

3.2.1.2.3. The Adjective in Baker's (2003) Theory of Lexical Categories

Traditionally, there have been notional, morphosyntactic, and distributional motivations for defining syntactic categories. According to the notional reasoning, nouns typically designate persons, things, and places; verbs typically express action or state; and adjectives express qualities, etc. However, as has been pointed out by many scholars, purely semantic reasoning is never successful—as is witnessed by such examples

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[80] I have exchanged the order of the stative and gradable rows. The symbol ± means that *asleep* is half-gradable. In the case of *polite*, it is noninherent when it is used as having [+dynamic]. The asterisk means that the notion of stativity does not apply to the relevant adjectives. *Regional* in this table appears in such a sentence as *the novelists we studied were mostly regional.*

as *beauty* (a noun expressing a quality of being beautiful) and *matter* as in *money matters* (a verb expressing a quality of importance).

Morphosyntactic reasoning is likewise not completely decisive. There are many lexemes in English conventionally classified as nouns, which do not have plural forms such as *information*, *health* and *music*. Some verbs are also known to have no past forms—witness *must*, *ought*, etc. Some adjectives are known to have no comparative forms—witness *atomic*, *nuclear*, etc.

Distributional arguments are also far from perfect. Although the distribution of finite verbs is fixed in the sentence, verbs in the infinitive can occur in the grammatical subject position just as nouns can (*To see is to believe*, for example). In addition, in such examples as *a stone wall* and *a computer shop*, the nouns *stone* and *computer* can occur precisely the same way as adjectives.

Since the beginning of the generative paradigm, lexical categories like nouns, verbs, and adjectives have been used without being given rigid definitions for several decades. Noun, verbs, adjectives, and adpositions have long been distinguished by having different values for the two binary distinctive features +/– N and +/– V as (3.11) shows:

(3.11) a. noun = [+N, –V]
b. verb = [–N, +V]
c. adjective = [+N, +V]
d. adposition (preposition and postposition) = [–N, –V]

(Cf. Chomsky, 1970)[81]

[81] Chomsky (1970) does not say anything about the featural analysis of the adposition, although it is generally assumed to be [–N, –V].

However, it is obvious that such a binary-feature-based theory does not explain much because the binary features simply signals a four-way opposition, with each corresponding one of the four categories.

After reviewing several different approaches to lexical categories, Baker (2003) attempts to analyse lexical categories with renewed interest. Central to his theory of lexical categories is a claim that the noun is an index-bearing category and the verb is a theta-role assigning category. According to him, nouns alone have criteria of identity, which allows them to bear referential indices. In fact, this characterisation enables nouns to bind anaphors, traces, etc. and also qualify as theta-role receptors of verbs.[82] On the other hand, verbs are the only category which can take a specifier, a syntactic position that is normally assigned an agent or a theme theta-role. Nouns or adjectives have to seek for help from a functional category Pred to have this property. J. M. Anderson (1997) likewise claims that lexical categories are defined in terms of their alignment along what he defines as the referentiability-predicability scale.[83] The scale part aside, Baker's characterisation of nouns and verbs gives a good support to at least nouns' referentiability and verbs' predicability.

Then, how about adjectives? In Baker's framework, they are simply defined as a category being [–N, –V]. What this means is that the adjective can be defined as a category being neither nouns nor verbs. He gives the following three facts as evidence of his analysis: Firstly, adjectives can be direct attributive modifiers of nouns, while nouns and verbs cannot—witness *a beautiful woman*, but not **a [genius]$_N$ woman* or **an [admire]$_V$ woman*.[84] Second, such degree heads as *so*, *as*, *too* can

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[82] Note that theta-roles are thought to be inherently anaphoric in nature, linked to the NP that receives the thematic role in the same way as an anaphor is linked to its antecedent. See Williams (1989) for the development of such an idea.

[83] See 3.2.5.1 for J. M. Anderson's framework on lexical categories.

[84] According to Baker (2003: 197ff., 202ff.), N1s (i.e. prenominal noun modifiers) are analysed as having no referential indices, which differentiates them from his **a genius woman*. Its ungrammaticality is ascribed to the index-assignment of the full-fledged noun *genius* in this example. Indeed, this makes Baker conclude that N + N compounding happens in the

attach to adjectives, but not to nominal or verbal projections—as is witnessed by *Mary is too smart* vs. **Mary is too genius*/**People too admire Mary.* Finally, adjectives can be resultative secondary predicates, whereas nouns and verbs cannot—witness that *Japanese eat fish raw*/**Japanese eat fish powders* (wherein a 'small-clause interpretation' is involved)/**Japanese eat fish fill their stomachs.*

Baker's characterisation of the three lexical categories, nouns, verbs and adjectives, is basically on the right track. However, I think that the category adjective is not a category which can be characterised homogeneously as [–N, –V]. Indeed, foreshadowing my opinion to be presented in 3.2.5, RAdjs are adjectives which have the feature [+N, –V]—i.e. they are the ones having referentiality of their own, inherited from their BNs. In fact, there is high heterogeneity observed in the membership of the adjectival category; therefore, any simple blanket statement about the category would face applicability problems.

3.2.2. Classification of Attributive Adjectives

3.2.2.1. Yasui et al. (1974)

Adjectives used attributively are called attributive adjectives. According to Yasui et al. (1974: 74), adjectives in attributive position can be classified as follows in terms of their semantics:[85]

(3.12) Taxonomy of Attributive Adjectives (Yasui et al., 1974: 74)

a. Classifying adjectives (e.g. *rural policeman*, *English girls*, *criminal lawyers* 'lawyers dealing with criminal laws')

b. Characterising adjectives

   i. Restricting adjectives (e.g. *a tall boy, a good knife*)

   ii. State-describing adjectives (e.g. *a drowsy policeman, a hungry dog, an angry man*)

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morphological component. See 3.2.5.3 for the similarities between N1s, full-fledged nouns, and RAdjs in terms of their referentiality.

[85] In what follows, relevant adjectives are shown in underlined italics.

c. Identifying adjectives
   i Fully identifying adjectives (e.g. *the same man, the very person, the last king, his first novel*)
   ii. Partially identifying adjectives (e.g. *a similar mistake, an analogous fashion, a synonymous reading*)

d. Intensifying adjectives
   i. Noun-intensifying adjectives (e.g. *an utter incompetent, a true poet, a perfect ass*[86])
   ii. Determiner-intensifying adjectives (e.g. *a certain/ particular girl*)

Classifying adjectives (3.12a), as Yasui et al. put it, are 'those adjectives restricting the application of the concepts expressed by the head noun to a certain subset, leaving its inherent semantic properties unrestricted'. (75, translation mine) Note that almost the same thing is said about RAdjs ('associative attributives' by Huddleston and Pullum (2002: 556))—i.e. 'the property expressed by the adjective does not apply literally to the denotation of the head nominal, but rather to some entity associated with it.' (556) In the case of *rural policeman*, for example, *rural* only gives a classificatory label to the whole set of policemen.[87] On the contrary, in *a drowsy policeman*, *drowsy* shows a particular state that policeman is in and in *a tall policeman*, *tall* places restrictions on one of the inherent semantic features of *policeman*, [vertical height]. In the latter two examples, it is obvious that adjectives are not used for classificatory purposes.

Characterising adjectives (3.12b) have two subtypes. First, there is a group of **restricting adjectives** (3.12bi) which give restrictions on the particular properties of the referent of the head noun. In *a tall boy*, *tall* specifies that the value of [vertical height]—one of the inherent semantic features of the head noun *boy*—must be larger than the norm. The

[86] 'A perfect ass' happens to have a distracting alternative ascriptive reading in colloquial AmE (meaning 'flawless rump' rather than 'complete idiot').

[87] Note that we can replace *rural* with *country* in this example and say *a country policeman.*

second group is a group of **state-describing adjectives** (3.12bii). These adjectives only describe a particular state of the referent of the head noun. Note that in *a drowsy policeman*, there is not a class of policemen characterised as having drowsiness *a priori* because drowsiness is just a temporary state of the policeman.

One important characteristic of characterising adjectives is that they can be used predicatively. Since the notion of predication presupposes the existence of some sort of predicates, i.e. verb-like elements, we can consider characterising adjectives more verb-like than the other adjectives. If we assume something similar to the referentiability-predicability scale, following such linguists as J. M. Anderson (1987), Givón (1979) and Lyons (1977), characterising adjectives are located nearer to the predicability pole than the other adjectives.

However, we should keep in mind that premodification in general has a classifying function. This is because premodification normally narrows down the information amount of the head noun, as we shall see in 3.2.2.2. Therefore, in that sense, the above-mentioned three types of adjectives all have classifying function at the same time.

Researchers such as Larson (1998) and Giegerich (2005) talk about the *intersectivity* of adjectives, which means the way in which the information amount of the head noun is narrowed down. An intersective adjective such as *red* is characterised as the conjunction of the properties denoted by the adjective and the head noun. Giegerich (2005: 12) observes that '[a]n adjective's ability to occur in the predicative position is determined by its intersectiveness: 'this X_N is Y_{Adj}' is true only for entities which are both X and Y.' Note that the above examples of chracterising adjectives are all instances of intersective adjectives and are found in the predicative position—witness *That policeman is tall/drowsy.*

Identifying adjectives (3.12c) are classified further into the following two subtypes in Yasui et al.—that is, **fully-identifying adjectives** (3.12ci) and **partially-identifying adjectives** (3.12cii). The former adjectives have a function of uniquely identifying the referent of the head noun, whereas the latter adjectives specify partial similarities. Examples of the former type are seen *in the same man, the very person, the last king, his first novel*, etc. Yasui et al. observe that since they all specify the referent uniquely, they always co-occur with the definite article. Examples of the latter type include *a similar mistake, an analogous fashion*, and *a synonymous reading*. Yasui et al. (1974: 76) point out their inability to co-occur with the definite article.

Just like identifying adjectives, Yasui et al. recognise two types of **intensifying adjectives** (3.12d). Firstly, there is a group of **noun-intensifying adjectives** (3.12di) such *as an utter incompetent, a true poet, a perfect ass*, and *an utter fool*, which intensify certain semantic features of head nouns. For example, in the case of *an utter fool*, the adjective *utter* intensifies one of the semantic features of *fool*, [foolishness]. This is parallel to restrictive adjectives we have seen, but in the case of this type of adjectives, they always have an intensifying function.

Adjectives belonging to the second type are called **determiner-intensifying adjectives** (3.12dii) (Yasui et al., 1974: 77). Examples of this type are *a certain/particular girl, certain people*, among others. What these adjectives do is to show that the whole nominal expressions have specific meanings. Indeed, because of this, many scholars analyse them as something closer to the determiner. For example, Yasui et al. themselves mention the possibility for them to be analysed as determiners (77). See also the remark made by J. M. Anderson (1997: 46), which suggests the possibility that these adjectives 'incorporate a deictic or ranking element'.

In Yasui et al.'s classification, attributive-only adjectives and *bona fide*, ascriptive adjectives used attributively are not differentiated. If we focus on attributive-only adjectives, they belong either to classifying adjectives (3.12a), fully-identifying adjectives (3.12ci), or to intensifying adjectives (3.12d). Characterising adjectives and partially-identifying adjectives both have a predicative function, so they are not attributive-only adjectives. CAs belong to classifying adjectives (3.12a) in their classification.

3.2.2.2. Classifying Function and Attributive Adjectives

It has often been pointed out that attributive adjectives have some degree of classifying function. For example, Yasui et al. (1974) observe that 'when adjectives are used in the attributive construction, they have classifying function, which is not the case with postmodifying adjectives or adjectives in predicative use.' (74, translation mine) What they mean here is that attributive adjectives add some restriction to certain inherent semantic features of the head nouns, resulting in the enhancement of the classifying function. As to RAdjs and N1s, this classifying function is all the more highlighted, as can be witnessed by the following observations made by Warren (1988: 168), namely, '[...] the characteristic function of a Category II adjective [i.e. RAdj] is either classifying or descriptive [...]' and '[...] the characteristic function of an uninflected premodifying noun [i.e. N1] is either identifying or classifying [...]'. However, as Yasui et al. suggested, such a classifying function is not limited to RAdjs and N1s—even QAdjs have a classifying function when used in the attributive construction.

Indeed, this can be proved by the following facts; namely, when a premodifier does not have enough amount of information to bear classifying function, the resulting structure becomes ungrammatical:

(3.13) a. the murdered man / *the killed man
b. the polished instrument / *the cleaned instrument

c. the stolen jewels / *the taken jewels
d. the muttered/murmured/shouted words / *the said words

Yasui et al. (1974: 43)

In (3.13), we see that the participle forms of the verbs with general meanings are not allowed in the attributive construction, whereas those of the verbs with specific meanings are allowed to occur as premodifiers. Surely, there must be some minimum amount of information, based on which a certain expression becomes eligible for being a premodifier.[88] Interestingly, if the participles undergo further semantic limitation, the resulting structures are grammatical: [89]

(3.14) a. the accidentally killed man
b. the thoroughly cleaned room
c. the illegally taken money
d. the clearly said words

Yasui et al. (1974: 44)

Besides that, we see the following examples in which adjectives with general meanings do not qualify as premodifers, whereas if some semantic limitation is added, the resulting structures become acceptable:

(3.15) a. a seriously-ill person / *an ill person
b. the illegally taken money / *the taken money

Yasui et al. (1974: 45)

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[88] Note that situation is quite different in postmodification (e.g. *money taken, the stars visible, the only river navigable*). It has been pointed out by Kruisinga (1931: §931, §1979), Bolinger (1965, 1967), that postmodification related to the temporariness (or 'occasion value' in Bolinger's terminology) of the quality expressed by the head noun. A slightly different view from this is developed by Ferris (1993: 43ff.). He observes that the difference between premodification and postmodification corresponds to the difference between qualification and assignment. According to him, '[Q]ualification represents the aggregation of whatever properties the speaker feels are needed to identify sufficiently what he wishes to talk about, and so it is entirely to be expected that, on occasion, more than one adjectival property should appear. Assignment, on the other hand, requires a more explicit focus on the particular property assigned.' (55)

[89] This fact was pointed out by Barkaï (1972).

The above facts clearly show that when an adjective is used in the attributive construction, it has to have classifying function. [90] Interestingly enough, this classifying function is not a decisive feature for the predicative construction—as is witnessed by such complete grammatical sentences as *That person was ill*, *That money was taken*, and *That room was cleaned*.

3.2.2.3. Ascriptive Usage of Qualitative Adjectives (QAdjs) in Attributive Construction

We should bear in mind that except for 'predicative-only' QAdjs, QAdjs can also occur in the attributive construction. Note that as the following examples show, when QAdjs are also used attributively with the same meaning when they are used predicatively, they are said to have an ascriptive function. See the following examples:

(3.16) a. the *responsible* ('trustworthy') man / The man is *responsible* ('trustworthy' or 'be in charge (of something)').
Cf. a *responsible* job ('a very important job') / *The job is *responsible*.

b. *criminal* ('connected to crime' or 'committing a crime') lawyer / A full-scale dispute involving a strike would be *criminal* ('be illegal').
Cf. That lawyer was *criminal* (only meaning 'committing a crime').

In both cases, there are two different homonymic lexemes involved—attributive-only RAdjs on one hand and QAdjs on the other. We shall come back to this topic in 3.2.3.4.

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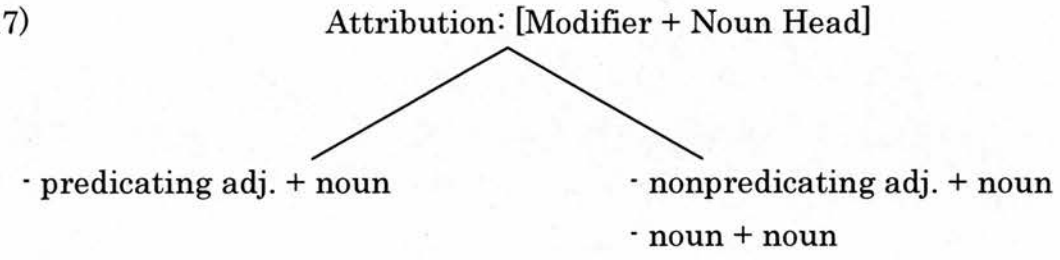
[90] What seem to be counterexamples to the above observation are such expressions as *a carnivorous lion*, *bipedal humans*, etc. Note that in these examples, adjectives simply pick up certain inherent semantic properties of the referents of the head nouns, emphasising them. Therefore, 'classifying function' here should be understood to cover such cases where 'highlighting, or emphasising effect' can be observed.

3.2.2.4. Warren's (1984) Generalisation

Attribution is a syntactic configuration of the form 'modifier + head noun' and can be further classified into two types. Following the lead of Warren (1984: 15), we can recognise the two subtypes in attribution.

(3.17)



Note that predicating adjectives in (3.17) are QAdjs in our terminology. We should also bear in mind that RAdjs are a subset of nonpredicative adjectives and nonpredicating adjectives are what we call 'attributive-only adjectives'. When the term nonpredicating adjective is used, it covers RAdjs as well as what Levi (1978: 7-8, 254 footnote 3) refers to as 'adverbial nonpredicating adjectives', such as *potential enemy*, *former roommate*, etc. See 3.2.3 for further classification of attributive-only (nonpredicating) adjectives.

3.2.3. Attributive-Only Adjectives

In 3.2.2, we have seen the general classification of attributive adjectives based on their semantics. In this section, we shall focus on the attributive-only adjectives, bearing in mind that RAdjs constitute their proper subset. Though the literature that deals with adjectival classification is substantial, the literature focusing on the attributive-only adjectives is relatively small. Let us start by reviewing some of the classificatory proposals made by the scholars.

3.2.3.1. Quirk et al. (1985)

The following is a classification of attributive-only adjectives proposed by Quirk et al. (1985: 428ff.):

(3.18) Quirk et al.'s (1985) classification of attributive-only adjectives:

a. Intensifying adjectives (e.g. *a true scholar, a complete fool, the absolute limit*): those having heightening, or lowering effect on the head noun.[91] (429-430)

b. Restrictive adjectives (e.g. *a certain person, the same student, the very man*): restricting the reference of the head noun exclusively, chiefly, or partially. (430-431)

c. Other adjectives related to adverbs (e.g. *my former friend, an occasional visitor*): those which are 'related to adverbs but do not always fall within the intensifying or restrictive types of adjectives'. (431-432)

d. Adjectives related to nouns (e.g. *polar bear, earthen pottery, atomic scientist*): those which are 'derived from nouns by means of suffixes'. (432)

This classification suggests that attributive-only adjectives are composed of the following three types: (A) those which are like determiners or quantifiers—(3.18a) and (3.18b) [92], (B) those which are like adverbs—(3.18c), and (C) nominal attributive-only adjectives (3.18d).

What is peculiar about this classification is that attributive-only adjectives are classified according to their functional similarities to other grammatical categories such as determiners or qualifiers (i.e. intensifiers, or restrictors in their terminology) adverbs, or nouns, without clarifying the nature of these functional similarities. Also importantly, we should remember that their 'adjectives related to nouns' only include morphologically transparent adjectives. Therefore, CAs such as *paternal* (~ father), *vernal* (~ spring) are excluded.

3.2.3.2. Huddleston and Pullum (2002)

[91] Though Quirk et al. (1985: 430) give *feeble* in *a feeble joke* and *slight* in *a slight effort* as the attributive-only intensifying adjectives having lowering effect, both of them seem to allow predicative use—witness *his joke is feeble, her effort was slight.*

[92] Note that adjectives in (3.18a) and (3.18b) can be analysed to 'incorporate a deictic or ranking element' (J. M. Anderson, 1997: 46) inside them.

Though admitting their semantic heterogeneity, Huddleston and Pullum (2002: 555ff.) submit the following classification of attributive-only adjectives:[93]

(3.19) [94] Huddleston and Pullum's (2002: 555-559) classification of attributive-only adjectives:

a. Degree and quantifying attributives (e.g. *a complete fool, a definite advantage, the extreme end*): those '[having] to do with the degree to which the property expressed in the head nominal applies in a given case.' (555)
b. Temporal and locational attributives (e.g. *his current girlfriend, an erstwhile gangster, the lower lip, her right eye*): those '[having] to do with the relative time at which the description expressed in the head applies, or with location in space]. (556)
c. Associative attributives (e.g. *clerical duties, criminal law, foreign affairs, a historical novelist*): 'the property expressed by the adjective does not apply literally to the denotation of the head nominal, but rather to some entity associated with it.' (556-557)
d. Process-oriented attributives (e.g. *a big eater, a fast worker, a firm believer*): 'The property expressed by the adjective [...] applies not to the denotation of the nominal but an associated process. It describes the degree or manner of this process, and in most cases there is a paraphrase in which the corresponding adverb modifies the verb: ...' (557)
e. Modal attributives (e.g. *the actual cause, a self-confessed thief, ersatz champagne*): those '[expressing] medium or weak modality ...' (557-558)
f. Particularising attributives (e.g. *a certain house, the chief*

[93] Huddleston and Pullum (2002: 555-559) prefer to use the term *attributives* to mean attributive-only adjectives.

[94] One of the characteristics of Huddleston and Pullum (2002) is that they try to make a rigid terminological separation between the syntactic (or distributional) notions and semantic notions. Here, the term 'attributive' is used to show semantic classification.

reason): those '[serving] to pick up a specific member or group of members of the set denoted by the head.' (558)

g. Expressive attributives (e.g. *my dear mother, her poor father, a bleeding nitwit, the bloody tax inspector*): those 'semantically non-restrictive' expressive adjectives and those adjectives '[expressing] the speaker's ill-will, irritation, anger, agitation, or in some cases enthusiastic approval ...' (558)

h. Hypallage: transferred attributives (e.g. *smoked [a discreet cigarette], a drunken brawl, a nude photo of the mayor*): those traditionally called transferred epithets or hypallage. (558-559)

Though Quirk et al. (1985) only treat those adjectives which are morphologically transparent under the title of 'adjectives related to nouns', Huddleston and Pullum (2002) include those adjectives like CAs whose relations to the corresponding BNs are suppletive—as is witnessed by *lunar, urban, clerical*, etc. in their 'associative attributives'. However, there is little mention of their relations with their base nouns except that '[a] good number of the adjectives of this kind are derived from nouns by means of suffixes like *-al* and *-ar*.' (557).

According to Huddleston and Pullum (2002), attributive-only adjectives lack at least one of the properties listed in (3.20) ordinary ascriptive adjectives have (illustrated summarily for *shy*). Note that attributive-only adjectives are shown in italicised underlined forms.

(3.20) a. ENTAILMENT

X is a shy N entails *X is an N* (e.g. *Tom is a shy man* entails *Tom is a man*).

- *Tom is the putative father* does not entail *Tom is the father.*

b. SUBSET

A shy N gives an answer to the question *What kind of an N is*

X? (e.g. *A shy man* is an answer to the question *What kind of a man is Tom?*)

- *A mere child* is not an answer to the question *What kind of a child is she?*

c. MODIFIABILITY

Shy can itself be modified (e.g. *a very shy man*).

- **the very/apparently late queen.*

d. PRO-FORM

Shy can modify the pro-form *one* (e.g. *Tom is the shy one*).

-**an utter one* (, though *an utter disgust* is fine.)

The examples are taken from Huddleston and Pullum (2002: 554-555)

3.2.3.3. Attributive-only Adjectives and Relational Adjectives

If we compare this classification of Huddleston and Pullum's (2002) with that of Quirk et al.'s (1985), we can get the following general classification of attributive-only adjectives:

1) **Intensifying adjectives**: those used to heightening or lowering the effect of the noun they modify. Examples are: *a clear failure*, *a definite loss* and *a true poet*. They include what Huddleston and Pullum (2002: 558) call 'expressive attributives' (e.g. *my dear mother*, *her poor father*, etc.)

2) **Adverb-related adjectives**: those including such examples as *the actual cause*, *a big eater*, *my former friend*, *rapid calculations*, and *the former reason*. What is characteristic of them is that they can only be related to adverbs in some ways. Thus, *the actual cause* is 'that which is actually the cause', *a big eater* is 'somebody who eats a lot', etc. This group includes Huddleston and Pullum's (2002: 556-558) 'temporal and locational, process-oriented, and modal attributes' such as *his current girlfriend* and *the lower lip*.

3) **Delimiting adjectives**: those 'restrict[ing] the reference of the noun exclusively, particularly, or chiefly' (Quirk *et al.*, 1985: 430) and include such examples as *a certain person*, *his chief excuse*, *the very man*, and *the precise reason*.

4) **Relational adjectives (RAdjs)**: those typically having a meaning, 'pertaining to', 'relating to', or 'associated with' and often have a morphologically strong relation with a noun. [95] They are what Huddleston and Pullum (2002: 556-557) refer to as 'associative attributives'. CAs (*vernal equinox*, *avian sanctuary*, etc.) are a proper subset of this category.

5) **Other attributive-only adjectives**: those including Huddleston and Pullum's expressive attributives and hypallage. The adjectives belonging to this category have not been treated extensively in the literature. See Jespersen (1909-1949: §17.1.1), Yasui et al. (1974: 176-179) for the description of such attributive-only adjectives. We are not going into the details of this type of attributive-only adjectives, but it seems interesting that expressive attributives and hypallage can be considered a case of special 'modifier-head merge', in which an adjective which cannot be directly connected with the head noun in terms of its semantics premodifies the head. For example, in *he was now smoking a sad cigarette* (= he was now sadly smoking a cigarette), the adjective *sad* has nothing to do with the head noun cigarette semantically. Rather, it can be regarded as an adverb 'localising itself into a form of noun premodifier', as it were. Note that in 3.2.4, we shall see how attribution can be analysed as a syntactic merger of the premodifier and the head noun.

Note that the above discussion shows that RAdjs are a proper subset of attributive-only adjectives. As to the characterisation of RAdjs,

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[95] This characterisation of RAdjs is loosely related to Quirk et al.'s (1985) characterisation of 'adjectives related to nouns' (3.18d). However, note that Quirk et al. require them to be 'derived from nouns by means of suffixes' (Quirk et al., 1985: 432)

Huddleston and Pullum (2002: 556) observe: 'in a large class of attributive adjective constructions, the property expressed by the adjective does not apply literally to the denotation of the head nominal, but rather to some entity associated with it'. Their examples are given in (3.21):

(3.21)

clerical duties	*criminal* law	*foreign* affairs
a *historical* novelist	a *lunar* landing	a *marine* biologist
a *mathematical* genius	a *medical* journal	a *medieval* scholar
a *military* expert	a *moral* dilemma	*musical* analysis
a *nuclear* physicist	*Platonic* realism	*urban* policy

(Huddleston and Pullum, 2002: 556)

Note that many RAdjs have homonyms which are QAdjs. For example, *a criminal lawyer* means 'a lawyer specialising in criminal law' (with *criminal* being a RAdj), or 'a lawyer who is bad, or morally wrong'. (with *criminal* being a QAdj (i.e. ascriptive adjective)).

3.2.3.4. Homonymy of Adjectives and the Organisation of the Lexicon

As we have seen, the large majority of adjectives are used both predicatively and attributively with the same meaning. Huddleston and Pullum (2002: 554) term them *ascriptive adjectives*. Note, however, that there are some adjectives which can be used both predicatively and attributively with some meaning differences, as shown below:

(3.22) a. the *responsible* ('trustworthy') man / The man is *responsible* ('trustworthy' or 'be in charge (of something)').
Cf. a *responsible* job ('a very important job') / *The job is *responsible*.

b. *criminal* ('connected to crime' or 'committing a crime') lawyer / A full-scale dispute involving a strike would be *criminal* ('be illegal').
Cf. That lawyer was *criminal* (only meaning 'committing a

crime').

c. the *present* ('existing now') members / the members are *present* ('being there').

In the above cases, it is necessary to posit at least two different homophones. In (3.22a), we need **responsible**[1] for a person and having both attributive and predicative functions, on the one hand; and **responsible**[2] for a job meaning 'requiring high responsibility' with only attributive function, on the other. In (3.22b), we assume that there are two homophones, the one of which—**criminal**[1]—means 'connected to crime' and has only attributive function, and the other of which—**criminal**[2]—means 'very bad, morally wrong, or illegal' and has both attributive and predicative functions. Note that **criminal**[1] is a RAdj whereas this **criminal**[2] is an ascriptive adjective because it can be used both attributively and predicatively with the same meaning. In (3.22c), semantics and syntax seem to have a one-to-one correspondence—witness the fact that **present**[1] has only attributive function with the meaning 'existing now', while **present**[2] has only predicative function with the meaning 'being there'.

Let me clarify the terminology. As to **responsible**[1], we analyse it as a QAdj and an ascriptive adjective. **Responsible**[2], in contrast, is a RAdj. **Criminal**[1] is a RAdj, whereas **criminal**[2] is a QAdj and an ascriptive adjective. **Present**[1] is an attributive-adjective, but it is neither a RAdj nor a QAdj. **Present**[2], on the other hand, is a QAdj, but not an ascriptive adjective. The following is the table which clarifies the relationship between attributiveness, predicativeness, ascriptiveness, RAdj-hood, and QAdj-hood:

(3.23)

Example(s)	· the **present**[1] members	· **responsible**[2] job · **criminal**[1] lawyer	· **responsible**[1] man · That man is **criminal**[2].	· The members are **present**[2].
Classification	Adverb-related attributive-only adjective	RAdj	QAdj (ascriptive adjective)	Predicative-only adjective
Attributive use	+	+	+	–
Predicative use	–	–	+	+
Used ascriptively? (= QAdj?)	–	–	+	–
RAdj?	–	+	–	–

[(+) means 'yes' and (–) means 'no'.]

Actually, the above discussion leads us to think that admitting polysemy in the organisation of the lexicon is not a good strategy for describing adjectives. If we say that *gregarious* means 'sociable', it should be interpreted as an example of the adjective having acquired a homophone meaning 'sociable', which can be used independently of the original adjective *gregarious* meaning 'of classes or species of animals'. Quirk et al. (1985: 430-431) mention that in *I drank some pure water* and *That is a pure fabrication*, there are two homonyms of *pure* involved—one being a central adjective meaning 'clean' and the other being an intensifying adjective meaning 'sheer'. They also observe that *certain* in *a certain person* and that in *a certain winner* are also homonyms (the former meaning 'a particular person' and the latter 'a person who is sure to win').

We should remember that the conventional lexicographical practices should not be taken as definitive. This is because different homophones

are often grouped under the same 'headword' either because of practical reasons such as limited space or because of the different policies adopted by the dictionaries. However, recent lexicographical trend shows that the so-called monosemous approach to the headword starts to be adopted by at least two dictionaries—namely, CIDE and CALD. See Chapter 4 for discussions about lexicographical problems in describing these adjectives.

3.2.4. Attribution and Phrase Structure

Many scholars have pointed out that exceptional nature of the attributive construction in terms of phrase structure rules. In this section, we shall focus on this topic.

3.2.4.1. Structural Mystery of Attribution

According to Baker (2003: 195ff.), the attributive construction displays exceptional characteristics in terms of the phrase structure. Major arguments come from two sources. Firstly, the adjective in the attributive construction normally does not take any complement. Huddleston and Pullum (2002: 551) give the following examples to show this characteristic:

(3.24)	PREDICATIVE		ATTRIBUTIVE
a.	She's [very good at chess].	b.	*a [very good at chess] friend
c.	She's [generous to a fault].	d.	*a [generous to a fault] sister
e	It's [easy to find].	f.	*an [easy to find] place

Secondly, adjectives in the attributive construction are not preceded by such degree elements as *so* and *too*:

(3.25)	PREDICATIVE		ATTRIBUTIVE
a.	The parents are [too proud].	b.	*the [too proud] parents
c.	That girl is so nice.	d.	*that [so nice] girl

According to Baker, these facts enable us to analyse the attributive structure as follows:

(3.26) $[_{DP}$ that $[_{NP}$ $[_{A}$ nice] $[_{N}$ girl]]

However, this configuration obviously violates one of the tenets of the phrase structure grammar; namely, non-head constituents of the phrase have to be maximal projections. Note that in (3.26), *nice* is just a zero-bar level lexical projection, although it is a non-head constituent.

Note that this A position in (3.26) can be filled by '*very/extremely* + adjective' combinations—as is witnessed by the grammaticality of *an extremely beautiful wife*, *a very good teacher*, etc. Some inherently comparative adjectives like *similar*, *different*, *inferior*, among others can also fill this position, but in such cases, their complements must be extraposed.[96] Otherwise, the whole adjective phrase has to be postposed.

(3.27) a. a rule similar to this
a similar rule to this
b. a book different from what I bought
a different book from what I bought
c. a status inferior to that of the professor
an inferior status to that of the professor

Yasui et al. (1974: 102)

These facts suggest that the A position in (3.26) must be occupied by some adjectival projections higher than the lexical, zero-level, projection.

One thing is certain about (3.26). That is the categorial nature of the A+N structure. It has to be an NP—or at least a nominal projection of some sort, not an adjectival projection of any sort. Baker (2003: 196)

[96] Those belonging to this group of inherently comparative adjectives include *analogous*, *equal*, *separate*, *opposite*, *equivalent*, and *synonymous*. Yasui et al. (1974: 74) term them 'partially identifying adjectives.

gives two arguments for such an analysis. Firstly, determiners can be added to this structure, whereas degree heads like *too/so* cannot (*that nice girl* but **too nice girl*). Secondly, such AP-selecting verbs as *seem* cannot take this structure as their predicate (**she seemed nice girl*). To this I would like to add another argument. This structure can be replaced by pro-*one*—witness *Do you mean this nice girl, or that one?* and this *one* is pro-nominal in nature, not pro-adjectival.

In fact, the above facts suggest that the attributive construction has to be given special treatment in the phrase structure grammar. As a whole, it is a nominal projection, but the modifier and the head constitute a special structure—probably, a kind of endocentric nominal structure in which a modifier structurally 'merges' into the head noun.

3.2.4.2. Bare Phrase Structure

Baker (2003: 196) considers that the above facts give empirical justification for the move from X-bar theory to Bare Phrase Structure first proposed by Chomsky (1994). In Bare Phrase Structure, there is no difference between different bar-level projections. So far as no other condition is violated, any two constituents in the same phrase can be merged to form a new phrasal unit.

Under the basic tenet of Bare Phrase Structure, the merge of two constituents results in the constituent headed by either of the two constituents. In the case of adjectival attribution, A + N combinations must form constituents whose heads are nouns, not adjectives, as we have seen above. This is exactly as Baker's theory of grammatical categories predicts.

In my opinion, the most important aspect of Baker's theory lies in his demonstration that the noun and the verb are fundamentally 'mutually dependent' categories in nature—'mutually dependent' in the sense that they have to be engaged somehow to the argument-predicate relation with

one requiring the other. They do not stand by themselves; verbs need their arguments to fulfil their theta-role assigning property and nouns need some other arguments or predicates, thanks to which their referential identity based on the sameness relations is insured. Adjectives, however, are not 'mutually dependent' in this sense because central members are not engaged in the argument-predicate relation. Note that central adjectives lack referentiality so that they do not qualify as arguments.[97] Also importantly, without the aid of copula verbs such as *be* and *seem*, they cannot qualify as predicates. Probably, this is the cause of the behavioural difference of adjectives in the phrase structure grammar. They do not engage in any subordination in terms of phrase-structure levels, but they simply merge with the nominal head.

If, on the other hand, the A + N part in the adjectival construction were headed by the adjective, the referentiality of the noun, being trapped inside the construction, could not enter into relations with other theta-assigning items (i.e. verbs), or with other index-bearing items (i.e. nouns). Therefore, I think Baker must be on the right track—as is witnessed by several syntactic arguments for justifying the nominal character of the A + N combination.

3.2.4.3. Further Implications of the Bare Phrase Structure Analysis of Attribution

This analysis of the adjectival attributive construction based on Bare Phrase Structure has some further implications. First of all, this syntactic merger of an adjective with a noun seems to be paralleled with semantics of the construction and indeed, some scholars have talked about the opaque, non-compositional nature of the adjectival attribution. For example, Marx (1983: 70) mentions the 'plasticity' of adjectival meanings. He notes that the same adjective can focus on a different property of a head noun in different contexts. This nature of adjectival attribution is

[97] As we shall see in 3.2.5, RAdjs are exceptional in that they have some referentiality so that they can be arguments in nominal expressions.

also mentioned by Lahav (1989) under the title of 'non-compositionality of adjectives'. If *a red star*, *a red bird*, *a red house*, and *a red book* all mean different kinds of redness—which unfortunately seems to be the case because, for example, for a house to be red, its outside walls have to be red but not its windows whereas for a book to be red, its cover has to be red—how can we derive the meaning of an adjectival attribution compositionally from the components?[98] I think that it is reasonable to regard this semantic non-compositionality of adjectival attribution as a by-product of the head merger.

Secondly, there is an endocentric structure observable in the internal structure of the NP in terms of semantics as well as syntax with the head noun at its centre; and pre-head modifiers are aligned in increasing nominal characteristics to the head. I think this can also be regarded as a by-product of merging nature in the attributive construction.

As to the ordering of adjectives as pre-head modifiers, the basic rule is: adjectives having more intrinsic relations to the head noun in terms of semantics and syntax are located nearer to the head noun. See the following general ordering rule provided by Yasui et al. (1974: 144):

(3.28)[99] identifying adjectives < intensifying adjectives < subjective adjectives < adjectives expressing time < colour adjectives <

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[98] Indeed, this is one of the reasons why sublexical semantic decomposition is crucial in analysing the nature of attributive attribution. See 3.3 for a Beardian analysis based on sublexical semantic decomposition.

[99] X < Y means that X precedes Y. As to identifying and intensifying adjectives, see 3.2.2. Subjective adjectives are those adjectives meaning a speaker's subjective judgment such as *tall* and *beautiful*. See Bache (1978) for the clarification of the subjectivity and objectivity of the meanings of adjectives. (i) shows that subjective adjectives precede adjectives expressing time, which in turn are followed by colour adjectives:

(i) a beautiful little old white table

Denominal adjectives in Yasui et al.'s terminology corresponds to our RAdjs. (ii) shows that denominal adjectives expressing origins and styles precede other denominal nouns.

(ii) a Russian trade delegation

See Yasui et al. (1974: 137ff.), Huddleston and Pullum (2002: 452ff.) for further argument on

participles < denominal adjectives expressing origins and styles < other denominal adjectives < attributive noun < head noun

(3.28) also shows that those adjectives expressing a speaker's subjective judgment precede those expressing objective observation of the reference of the head noun.

Thirdly, and very importantly, the analysis based on Bare Phrase Structure obscures the boundary between the lexical level and the phrasal level. Remember that in Bare Phrase Structure, there is no difference between different bar-level projections. In (3.26), it was shown that the adjective *nice* is just a zero-bar level lexical projection in spite of the fact that it is a non-head constituent. Indeed, this motivates an analysis based on the special syntactic merger in attribution.

Interestingly enough, this 'merger' analysis of attribution partly explains why the so-called 'lexicon-syntax divide' is obscured. Note that Giegerich (2005) points out the possibility that a range of attributive constructions involving RAdjs can be simultaneously of both lexical and syntactic provenance.

3.2.5. Relational Adjectives and Referentiality

RAdjs have many things in common with nouns. See Coates (1971), Levi (1978), Beard (1995: 187-191), among others. Citing Crystal (1967), Coates (1971: 160) observes that what Coates calls *denominal adjectives*—i.e. RAdjs—are a 'bridge' class, which satisfies certain criteria relating to the noun and other criteria relating to the adjective.[100] Levi's (1978) solution is a more radical one. Adopting the Generative Semanticist framework, she assumes that every RAdj is derivable from its BN by invoking what she refers to as Morphological Adjectivisation.

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adjective ordering in the NP.

[100] According to Crystal (1967: 50), 'If syntactic and other criteria show some words to be clearly class X, for example, and others class Y, then it is the case that there are usually other words which share some of the characteristics of X and some of Y, forming a kind of 'bridge' class, assignable to neither.'

However, it is unfortunate that neither Coates (1971) nor Levi (1978) explains the nature of the morphological derivation between RAdjs and their BNs.

3.2.5.1. Referentiality and Grammatical Categories

J. M. Anderson (1997) adopts a framework of notional grammar to explain grammatical categories. He assumes the following predicability-referentiability scale in defining grammatical categories:

(3.29)

{P}	{P;N}	{P:N}	{N;P}	{N}	{ }
aux	*verb*	*adjective*	*noun*	*name*	*functor*

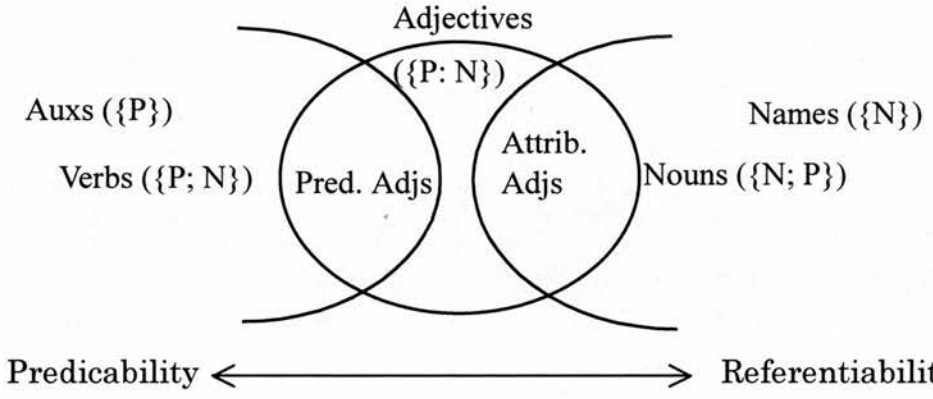
Predicability ⟵⟶ Referentiability

J. M. Anderson (1997: 60)
[with the scale of the last line added by me]

In his framework, syntactic categories are interpreted as dependency complexes of simplex features. {A} means that feature A appears alone in the categorical representation, {A, B} means that features A and B combine, {A; B} means that feature A governs feature B, and {A: B} means that features A and B are mutually dependent. (3.29) shows that the verb is expressed as a feature complex in which predicability (P) governs referentiability (N), the noun is expressed as a feature complex in which N governs P, and the adjective is expressed as the feature complex wherein N and P combine. Interestingly enough, this shows the category A is just intermediate between the categories V and N in terms of P and N features.

In Koshiishi (2002: 67), I slightly modified the above version of J. M. Anderson's theory and proposed the following alignment of second-order categories using the same scale:

(3.30) (= (2.19)) Syntactic categories aligned on the predicability-referentiability scale:



The basic idea is that there are two kinds of adjectives—(a) predicating adjectives (also known as QAdjs) and (b) attributive-only adjectives, of which RAdjs are a major part. RAdjs have referentiability stronger than predicability, while, vice versa, QAdjs have predicability stronger than referentiability. Therefore, QAdjs and RAdjs can be analysed as {(P; N); (P:N)} and {(N;P); (P:N)}, respectively.

Though I think that this intuitively reflects the categorical alignment of English, this scale lacks objective criteria and hence needs further refinement and clarification.

According to Baker (2003), the noun is the only category that can bear referential indices and the verb is the only category, which can assign theta-roles. The adjective, on the other hand, is defined only negatively—i.e., it is defined as the category lacking both noun's referential-bearing property and verb's theta-role-assigning property. Actually, this opinion of Baker's conforms nicely to the above predicability-referentiability scale of J. M. Anderson's. Except for the scalar nature of J. M. Anderson's proposal, J. M. Anderson's predicability and refentiability roughly corresponds to Baker's theta-role-assigning property of the verb and index-bearing property of the noun.

In my opinion, however, contrary to Baker's analysis, RAdjs are exceptional adjectives in that in spite of being adjectives they have certain referentiality–i.e. the index-bearing property.

I would like to start by revisiting Baker (2003).

3.2.5.2. Baker (2003) Revisited

Baker (2003) studies syntactic categories in the generative framework and concludes that the noun is the only category bearing a referential index, whereas the verb is defined as the category having a theta-role assigning property. The adjective is analysed as having neither index-bearing nor theta-role-assigning properties.

As to nouns, Baker claims that nouns and only nouns have criteria of identity, whereby they can function as standards of sameness (semantically); and that nouns only bear referential indices expressed as ordered pairs of integers (syntactically). This fundamental characterisation of nouns as the only R[eferential]-index-bearing category enables him to explain: (A) why nouns usually inflect for number, (B) why they have special relations with quantifiers and determiners, (C) why they can provide the antecedents for pronouns in discourse, (D) why certain movements are limited to nouns, and (E) why nouns must be related to argument positions in the clause.

Firstly, as to the noun's general ability to inflect for number, Baker observes that the criterion of identity (the noun's semantic property) enables them to be used for counting. It is clear that identification presupposes counting in the sense that the same entity must not be counted more than once. Contrary to nouns, neither adjective nor verb supports counting. Thus, 'taking two naps (i.e. nominal)' is okay, whereas 'to two nap (i.e. verbal)' and 'to be two sick (i.e. adjectival)' is no good because 'to nap' is an event and 'to be sick' is a condition; neither of them satisfies any criteria of identity.

Secondly, as to the co-occurrence of nouns with quantifiers and determiners, Baker's view diverges from the generally adopted idea that quantifiers and determiners close off NPs by assigning R-indices to nominal projections.[101] He, on the contrary, observes that the nouns and their projections themselves bear R-indices even in the absence of DP projections. Actually, Baker's opinion can be regarded as an extension of Chierchia's (1998), which claims that nouns are of argumental rather than predicate type (<e> rather than <e,t>). As we all know, plural count nouns and mass nouns can be used freely as arguments without any quantifiers or determiners.

Thirdly, as to the ability of nouns to qualify as pronominal antecedents in discourse, Baker's claim is that since only nouns and their projections bear indices, they alone can enter into coreferencing and binding relationships. He cites Kayne's (1984) examples and tries to prove his claim:

(3.31)[102] a. Albania$_{\{j,k\}}$'s destruction of itself$_{\{j\}}$ grieved the expatriate community.

b. *The Albanian destruction of itself$_{\{j\}}$ grieved the expatriate community.

c. The Albanian self-destruction grieved the expatriate community.

These examples in which reflexives are involved clearly show that APs cannot be antecedents of *self*-anaphora, whereas possessives can.

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[101] See Longobardi (1994) for this idea that nominals must appear with a determiner in order to be used as an argument in English and in the Romance languages.

[102] Baker's indexation theory is different from the Discourse Representation Theory's and the traditional indexation style in that ordered pairs of integers are adopted. $X_{\{j,k\}}$ means that 'j is the same X as k'. The motivation behind his theory is that this enables us to grasp the generalisation that nouns have a relational task of tracking sameness and difference of reference.

Interestingly, however, reflexives are different from pronouns in that the antecedents of the former have to be syntactically within local domains whereas the latter are often understood as referring to something inferable from the general contexts. See examples in (3.32):

(3.32) a. Italy$_{\{j,k\}}$'s announcement that it$_{\{j\}}$ would invade Albania caused a stir.

b. ??The Italian announcement that it$_{\{j\}}$ would invade Albania caused a stir.

(Baker, 2003: 126)

The examples in (3.32) suggest that so far as the interpretation of pronouns is concerned, their antecedents are marginally supplied by RAdjs. We shall return to this topic in 3.2.5.3.

Fourthly, as to movements, Baker observes that the following two kinds of movements apply exclusively to nouns and nominal projections: those involving movements to the subject position and those connecting two thematically relevant positions by way of a null operator.[103] In both cases, relevant source and target positions require referential indices to connect them. Other movements are not limited to only one type of category and are regarded simply as copying and deleting.[104]

Finally, as to the relationship between nouns and argument positions,

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[103] The former type is illustrated by the NP-movement and the latter is by the null operator movement. Their relevant examples are shown in (i) and (ii), respectively:

(i) a. Everyone deplored China's$_{\{j,k\}}$ destruction t$_{\{k\}}$ by Russia.
b. *Everyone deplored Chinese destruction t$_{\{j\}}$ by Russia.

(Baker, 2003: 132)

(ii) a. John gave Mary [$_{NP}$ the flower$_{\{k,n\}}$ [Op$_{\{k\}}$ that he promised t$_{\{k\}}$ to her.
b. *I will proud the metal [$_{AP}$ flat [Op$_{\{k\}}$ that the foil is t$_{\{k\}}$].
c. *Chris will [$_{VP}$ sing [Op$_{\{k\}}$ that Pat will t$_{\{k\}}$]].

(Baker, 2003: 23)

[104] Baker gives the following adjective movement as an example of simple copying and deleting:

(i) a. Chris is [$_{QP}$ proud$_i$-er [$_{AP}$ t$_i$ of our children]]
(ii) b. Pat is [$_{QP}$ angry$_i$ enough [$_{AP}$ t$_i$ at the boss]]

(Baker, 2003: 141)

Baker maintains that nouns must fill one of such positions in order to satisfy his Noun Licensing Condition (NLC). What this NLC stipulates is that nouns must have a 'relational task of binding structures together and tracking sameness and difference of reference' (153). Indeed, this is a very good observation in that when we use nominal expressions, what we do is always to search for some sort of relations between them and other expressions based on the sameness and difference of their reference. Such a simple expression as 'Bad luck!' has to be understood as something like 'your situation was bad luck'—i.e. as a remark establishing a relation between the present unfortunate situation of the hearer and the nominal expression 'bad luck'.

One thing which should be noted is that argument positions in nominal expressions do not have to be filled by nouns or nominal projections. This is because nouns do not have a theta-role-assigning property of their own. When an element with some referentiality enters into an argument position of a nominal expression in which a nominalised form or a so-called 'picture' noun is involved, one of the following options has to be selected:

1) A preposition is used which overtly expresses the argument relations between them;

2) The element with some referentiality takes a POSS form or is converted into a RAdj, and its argumental meaning is provided by 'a small number of high-level semantic categories' (Beard, 1991: 221).

3) The element with some referentiality takes a nominal form and is put in front of the nominal expression to form an N1 + N2 combination. The argumental meaning of N1 is provided by 'a small number of high-level semantic categories' (Beard, 1991: 221) as in 2).

3.2.5.3. Relational Adjectives and Their Referentiality Type

RAdjs are often analysed as being strongly noun-like. My assumption is that RAdjs diverge from the other adjectives in that they have referentiality and hence referential indices provided by their BNs. Especially important is RAdjs' ability to behave as arguments against predicative elements hidden in the head nouns in RAdj + N combinations.

If we examine RAdjs for the applicability of Baker's (2003) five characteristics of nouns we have seen in 3.2.5.2, we can get the following results:

Firstly, as to the applicability of countablity, some RAdjs are known to show a certain degree of countability—as is witnessed by the following examples in (3.33a):

(3.33) a. monochromatic, binational, triconsonantal, quadrasonic, multiracial, polyphonic, omnidirectional
b. monoplane, biped, triangle, quadrangle, multicylinder, polysyllable
c. *monohigh, *bired, *tristrong, *quadralow, *multidense, *polynear, *omnistupid

Levi (1978: 24)

The examples in (3.33b) are nouns. Note that RAdjs in (3.33a) parallel nouns in (3.33b) in terms of countability whereas QAdjs in (3.33c) do not.

Secondly, as to the co-occurrence with determiners and quantifiers, RAdjs are not similar to nouns because they do not co-occur with either of them. In the case of nominal projections, they are usually closed off by determiners or quantifiers; whereas in the case of RAdjs, they are not. This characteristic of RAdjs endows them with their 'typal' meanings, rather than 'individualised, token-based' meanings.

Thirdly, as to RAdjs' ability to become antecedents of *self*-anaphora or pronouns, RAdjs are not like nominal projections because they normally cannot become their antecedents. Relevant examples were shown in (3.31b) and (3.32b). Note that there is a subtle difference in grammaticality judgment between (3.31b) and (3.32b). Such cases as shown in (3.31b), in which RAdjs behave as antecedents of *self*-anaphora, are completely impossible, whereas cases like (3.32b), in which RAdjs c-commands pronouns, are highly marginal but not completely impossible. In my opinion, this is because *self*-anaphora requires a higher level of referential identity than pronouns.

Fourthly, as to as to the movement to subject and movements combining two thematically relevant positions by way of a null operator, RAdjs are not like nominals. (3.34b) shows that RAdjs cannot antecede the trace in the movement to subject:

(3.34) a. Everyone deplored China's$_{\{j,k\}}$ destruction t$_{\{j\}}$ by Russia.
b. *Everyone deplored Chinese destruction t$_{\{j\}}$ by Russia.
Baker (2003: 132)

The examples in (3.35) show that RAdjs are not involved in movements combining two thematically relevant positions by way of a null operator:

(3.35) a. It's *this flower* that John will give Mary —. (Baker, 2003: 136)
b. *It's *musical* that John will give — performance.
c. *It's *musical* that John will listen to — criticism.

The above examples suggest that those movement phenomena involving nominal constructions require nominal type 'token-identifying referentiality' rather than RAdj-type 'type-indicating referentiality'.

Finally, as to the ability to occupy argument positions, RAdjs are different from nominals in that they cannot become arguments of clauses—as is witnessed by the total ungrammaticality of **(The) presidential announced that the Government will launch a health insurance scheme for Government employees.*

However, if we turn our attention to nominal constructions, we notice that RAdjs can behave exactly as arguments. For example,

(3.36) a. Italy's / the Italian invasion of Albania (Baker, 2003: 143)
b. China's / the Chinese invasion by Japan

In the following examples, RAdjs are the antecedents of PRO:

(3.37) a. the American attempt PRO to attack Cuba
b. the Russian promise to Germany PRO to attack America
c. the American request to Germany PRO to attack Cuba

In (3.36a), in both cases, the POSS *Italy's* and the RAdj *Italian* both behave as agents, while in (3.36b), the POSS *China's* and the RAdj *Chinese* both behave as patients. The examples in (3.37) show that RAdjs can behave as arguments—i.e., agents—to the embedded infinitival clauses.

Importantly, however, there is a difference between nominal projections and RAdjs as to the ways they are interpreted. In the case of nominal projections, the argument involved has a very strong, token-identifying referentiality. This is because the referential index of the nominal is closed off by a determiner. In the case of RAdjs, on the other hand, the argument involved has a weak, type-indicating referentiality. Thus, their BNs undergo a generic interpretation and never mean anything specific.

Take *presidential nomination* for example. This expression does not mean any specific president's nomination but the nomination of the president in general. If a definite article precedes the whole combination, then, it does not modify the BN of the RAdjs *presidential*, but modifies the head noun *nomination* and the whole structure forms an endocentric structure. The situation is completely different in the case of *the president's nomination*, however. In this case, the definite article closes off the nominal president to form a DP and POSS is attached to the whole DP *the president*, not only to the head noun *president*. Traditionally, this structure is called 'group genitive'. In Koshiishi (1989), I studied this POSS *-'s* and concluded that it should be better analysed as a clitic, rather than an inflectional suffix.

Note that when a verb is nominalised, its theta-role assigning property disappears together with tense and aspectual properties and the resulting nominal structure presents only a 'gist of the event' (i.e. 'what happens?' sort of information), so to speak. Contrary to clauses, nominals express argument relations either by items with strong, 'token-identifying' referentiality such as *of*-PPs or POSSs, or by items with weak 'type-indicating' referentiality such as RAdjs or N1s. See the following examples:

(3.38) a. the nomination of the president (*of*-PP)
b. the president's nomination (POSS)
c. presidential nomination (RAdj)
d. candidate nomination (N1)

As I noted before, the 'type-indicating referentiality of RAdjs can be ascribed to the RAdjs' failure to include determiner-like elements inside them.

The traditional view is that nouns do not have their referential indices without being accompanied by determiners.[105] However, following the lead of Chierchia (1998), Baker (2003) maintains that irrespective of determiners' accompaniment, nouns have all their referential indices. In the traditional view, determiners play a crucial role in giving nominals their referential indices. However, also in the latter opinion, determiners are important because they license the nouns' referential indices.

Finally, two remarks are in order before closing this subsection. First, there is a special usage of POSSs, according to which POSSs behave exactly the same as RAdjs. This usage is traditionally called 'genitive of description'[106] and has attracted little attention so far. See the following examples:

(3.39) a. [[the] [[obvious] [printer's errors]]]
b. *[[the] [[obvious printer's] [errors]]
c. [[his beautiful wife's] [hat]]

Yasui, et al. (1974: 35)

(3.39a) is an example of 'genitive of description', whereas (3.39c) is an example of usual 'determinative genitive' in which a POSS belongs to the class of determiners. Yasui et al. (1974: 35-36) gives the following additional examples of 'genitive of description':

(3.40) the obvious printer's errors, those soft watchful women's eyes, an old beginner's English book, a loud visitor's knock, expensive children's shoes, a big blackbird's nest, an interesting ten minutes' walk, etc.

In the examples listed in (3.40), determiners modify the head nouns of the entire nominal expressions.

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[105] See Longobardi (1994) for example.
[106] Huddleston and Pullum (2002: 470) refer to this as 'descriptive genitive'.

Interestingly, the following expressions are ambiguous in that they have either 'genitive of description' readings, or 'determinative genitive' readings:

(3.41) a. her mother's love
  i) the love of her mother
  ii) her motherly love
 b. these small children's shoes
  i) the shoes for these small children
  ii) these shoes for small children
  iii) these small shoes for children

Yasui, et al. (1974: 36)

(3.41aii), (3.41bii), and (3.41biii) are the 'genitive of description' readings.

Note that the 'genitive of description' does not have a strong, identifying type of referentiality—as is shown by the following paraphrases:

(3.42) a. these expensive children's shoes
 b. these expensive shoes for Ø / *the children

(Yasui, et al., 1974: 36)

(3.43) a. her fine pianist's hands
 b. her fine hands like those of a / *the pianist

(Yasui, et al., 1974: 36)

Although both nominals in (3.42a) and (3.43a) are specific as wholes, it is obvious that the specificity involved derives not from 'genitives of description', but from the determiners—i.e. *these* and *her* respectively.

We shall come back to this special use of POSSs in 3.2.5.4 in comparison with other prenominal modifiers, but for the moment, suffice it to say that

the 'genitive of description' has the same 'type-indicating' sort of referentiality as RAdjs. Indeed, this amounts to saying that RAdjs and the 'genitive of description' are only different from full-fledged DPs in that they do not have determiner-like element inside them.

Secondly, when more than one item with different referentiality is involved in one nominal structure, the one with stronger 'token-identifying' referentiality can win out as a real argument, while the other one with weaker, 'type-indicating' referentiality only loosely relates to the head noun. Thus, just like *her maternal love*, *her mother's love* means 'her motherly love' and never means '(general) mothers' love for her' or 'her love for (general) mothers'. Interestingly, in both examples, the RAdj *maternal* and the POSS *mother's* are transferred into QAdjs meaning 'motherly'.

3.2.5.4. Referentiality and Various Types of Attribution

Let me summarise about the strength of referentiality and linguistic expressions as PPs, POSSs, RAdjs, and N1s.

Firstly, 'token-identifying' referentiality is involved in PPs and the 'determinative use' of POSSs—which is provided by the fact that they involve the DP inside them. PPs are analysed as having the [P + DP] structure, and POSSs are analysed as DPs with the genitive clitic *-'s* (or, phrasal suffix) attached to them. Note that in the case of PPs, prepositions explicitly provide the various semantic relations. In the case of POSSs, however, they are 'loosely' related to the head noun in terms of their meanings and the situation-dependent meanings are defined by 'a smaller number of high-level functions' (Beard, 1995: 189). Note that these high-level functions have their own hierarchy of abstractness. The top in the hierarchy is occupied by the catchall meaning, 'related to ...'. As we go down the hierarchy, more concrete meanings such as 'by ...', 'for ...', etc. can be found.[107]

[107] Animacy, length of the nominal expressions, etc. influence the choice between *of*PPs and

Secondly, RAdjs and the special uses of POSSs called 'genitives of description' have weak, 'type-indicating' referentiality. The source of this weak referentiality derives from the fact that their referential part—BNs in the former and the nouns to which the POSS marker is attached in the latter—lack determiners. Both do not refer to anything specific; rather, they refer to a type of which their referential parts are representative. As we have seen in 3.2.5.3, RAdjs and this special use of POSSs are both syntactically and semantically very similar.

Thirdly, when a nominal expression includes both an item with 'token-identifying' referentiality and an item with 'type-indicating' referentiality, the former wins out as an argument of the theta-role assigning property hidden in the head noun. Thus, in such examples as *the journalists' scholarly attempt*, *the sociological studies by anthropologists*, arguments are the *journalists* in the former and *anthropologists* in the later. RAdjs in these examples function at best as having the 'related to ...' meanings, or sometimes, function as QAdjs with the addition of evaluative elements in their meanings.

Finally, N1s have also 'type-indicating' referentiality. However, N1 + N2 combinations are different from the others in that they are not syntactic, but morphological structures.[108] We shall see in Chapter 5 that many RAdjs have been introduced in English from Romance languages to replace the N1s in the native N1 + N2 combinations. Indeed, N1s and RAdjs compete in many cases, which leads to the prestigious status of the latter.

See (3.44) for the tabulation of the discussions made so far:

POSSs in English. See Altenberg (1982) for further constraints on their choice.

[108] However, we should note that, as we have seen in 3.2.4, attribution blurs the syntax-morphology boundary. Also importantly, some people consider compounding is quasi-syntactic. See S. R. Anderson (1988: 187-188), Giegerich (2006), among others for further discussions.

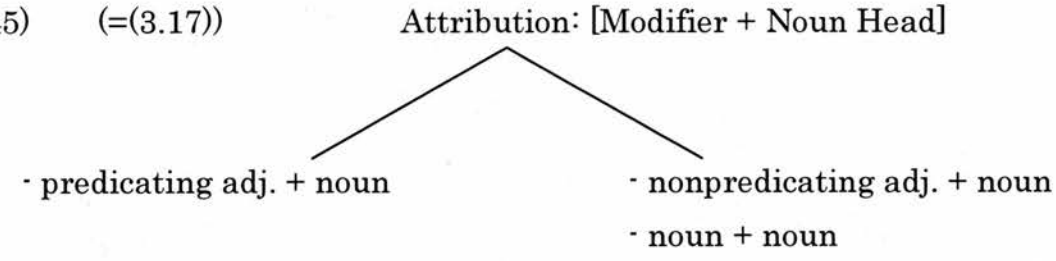
(3.44) Comparison of RAdjs, PPs, POSSs, and N1s

Componential belonging	Syntax	RAdjs POSSs ('genitives of description')	PPs POSSs ('determinative genitives')
	Lexicon	N1s	—
Referentiality		Weak, 'type-indicating' referentiality	Strong, 'token-identifying' referentiality
Semantics		Generic meanings	Specific meanings

3.3. Semantics of Relational Adjectives

RAdjs are known as attributive-only adjectives; they lack predicative uses. Attribution is a syntactic configuration of the form [Modifier + head noun] and can be further classified into two types. Following the lead of Warren (1984: 15), we can recognise the two subtypes in attribution.

(3.45) (=(3.17))



Note that predicating adjectives are QAdjs in our terminology. Also, we should bear in mind that RAdjs are a subset of nonpredicating adjectives (also known as 'attributive-only adjectives') in (3.45). When the term nonpredicating adjective is used, it covers RAdjs as well as what Levi (1978: 7-8, 254) refers to as 'adverbial nonpredicating adjectives'.

In this section, we first see the semantics of RAdj + N combinations. Since they are part of the attributive construction in general, occasional reference to the attribution is inevitable. After reviewing previous treatments, various semantic relations RAdjs' semantic features have

with those of the head nouns are considered, adopting Beardian sublexical decompositon approach. After that, we shall see frequently occurring phenomena of semantic shift from RAdjs to QAdjs.

3.3.1. Semantics of Relational Adjective + Noun Combinations

3.3.1.1. A Brief Review of Previous Studies on Attribution

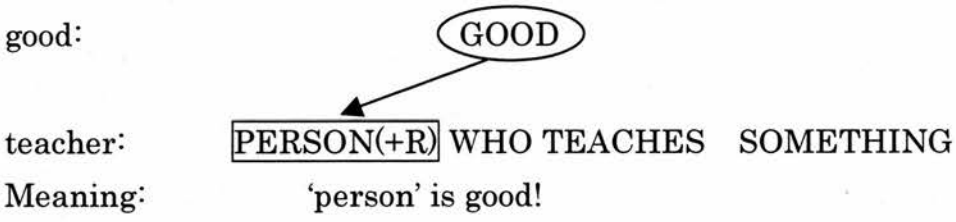
Previous semantic studies on the RAdj + N combinations can be divided into two stages. First, there was a period of analysing RAdjs as an amalgamation of 'referential cores' and 'covert semantic predicates'. BNs are the source of referential cores and various sets of 'covert semantic predicates' are proposed—as is witnessed by Ljung (1970), Levi (1978), Warren (1984, 1988), among others. Unfortunately, however, the difference between RAdjs and QAdjs in terms of their referentiality was not recognised widely in the literature. Thus, in her analysis of attribution in general, Warren (1988) analyses not only RAdjs but also QAdjs as composed of some referential content and connecting links. This is typically shown by her analysis of non-derived adjectives such as *tall*, *short*, *brief*, *dead*, *deaf*, *red*, *big*, and *sad*.), according to which *tall* is analysed as 'having tallness', *short* as 'having shortness', *brief* as 'having little duration', *dead* as 'not having life', and so on. Warren observes that the possibility of this analysis was once suggested by Aarts and Calbert (1979); however, she admits that her analysis of non-derived adjectives is still 'an untested hypothesis' (130). In my opinion, what we have discussed in 3.2.5.4 strongly suggests that there should be a rigid separation line between RAdjs which have referential elements inside them and QAdjs which do not.

The second stage of research started with the recognition that sublexical semantic features play crucial roles in the semantics of attribution. Indeed, this line of thought can be regarded as a revival of Generative Semantics in that they consider sublexical semantic decomposition is necessary. Take the construction *a good teacher* for example. As

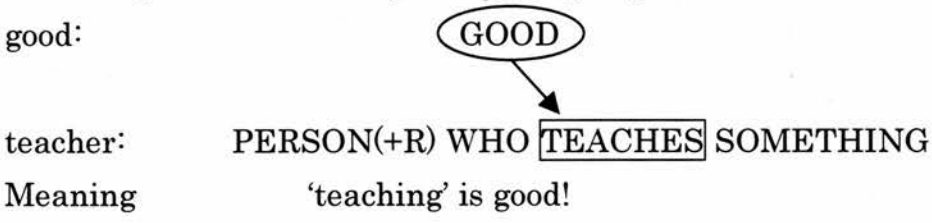
Bolinger (1967) pointed out, it is understood to mean either (A) 'a teacher who is a good person', or (B) 'a person who teaches well'. In Bolinger's terminology, (A) is an instance of 'referent modification' (15); while (B) is called 'reference modification' (15); however, I will adopt Beard's (1991) terminology, whereby the former is referred to as 'wide scope reading' (WSR) and the latter as 'narrow-scope reading' (NSR). What is important is the fact that this difference in meaning cannot be explained without recourse to sublexical semantic decomposition of the constituents. In WSR, the adjective *good* relates to the 'referential core' of the head noun *teacher*—tentatively expressed as PERSON; whereas in NSR, *good* relates to the sublexical semantic feature also tentatively expressed as TEACHING which together with other semantic features constitute the head noun *teacher*.[109] The following is the visual illustration of this distinction:

(3.46) Reading types Sublexical semantic decomposition (informal)

a. WSR ('a teacher who is good as a person'):



b. NSR (' a person whose way of teaching is good'):



In (3.46), uppercase letters show semantic features informally, and the arrows show modification relationships. '+R' shows that the semantic feature in question is a 'referential core'.

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[109] Though I use the word 'relate' to indicate the linking of semantic features, Beard (1991: 208-209) uses the term 'subjunction (subjoining)' to mean the same thing.

In fact, the need for this sort of sublexical semantic decomposition has already been noticed by some researchers. Yasui et al. (1974: 168) points out that the scope ambiguities normally arise when the head nouns express some sort of special functions. Therefore, in the case of *a good teacher*, since the head noun *teacher* expresses 'a person having a special function of teaching something', the resulting NP, *a good teacher*, has a scope ambiguity. In the case of *a good person*, on the other hand, the head noun *person* itself is an embodiment of the referential feature and does not have an additional semantic function to which the adjective *good* relates; hence, the whole expression does not give rise to any scope ambiguity. This statement implicitly assumes that some sort of sublexical semantic analysis is necessary for explaining the semantics of the adjectival attributive construction.

Also, such a need seems to be implicitly assumed in Quirk et al. (1985: 432), who observe that examples like *a clever liar*, in which the head noun expresses pejorative notion, do not allow predicative use. This is because in the case of *a clever liar*, the adjective clever modifies 'a person who habitually lies' and not just 'a person', the head noun's referential feature.

Incidentally, this sort of analysis we have seen for such examples as *a good teacher* makes a strong claim that sublexical semantic properties are more 'fine-grained' than structural configurations in the treatment of the attributive construction. What is even remarkable is that the head noun does not need to be a morphological derivative. For example, *a good chef* also gives rise to this kind of scope ambiguity. It can mean either 'a chef who is good as a person' (WSR), or 'a person whose way of cooking is good' (NSR). Therefore, we should always remember that though the word may be the primitive element for the purpose of the syntax, it is only 'a tip of the iceberg' in the semantic description of attribution.

3.3.1.2. Warren (1988)

Warren (1988) studies the ambiguity and vagueness in the attributive construction. The central object of study is adjectival attribution; however, she also takes into consideration N1 + N2, POSS + N combinations together with A + N combinations.

In her study of ambiguity, she analyses the adjectives as composed of two parts: (A) referential contents and (B) linking elements. Thus, *dead* is analysed as composed of LIFE (referential content) + DEPRIVED OF (linking element), *smoky* as composed of SMOKE (referential content) + EMITTING (linking element), and so on. Even morphologically simple adjectives are analysed as such—witness *sad* as SADNESS (referential content) + EXPERIENCING/MANIFESTING/CAUSING (linking element).

After that, she recognises the following four types of ambiguity—(a) relational, (b) lexical, (c) structural, and (d) functional. By relational ambiguity, she means such cases as *dusty snow* meaning either 'snow having dust on it' or 'snow being like dust (i.e. finely grained)', in which more than one possibility of linking element selection is involved. Lexical ambiguity occurs when there was more than one possibility in interpreting the referential content of the modifier—as is witnessed by *democratic/Democratic spokesman* having ambiguity between 'spokesman adhering to democracy' and 'spokesman belonging to the Democratic Party'. Structural ambiguity happens when an interpretation wavers between a synthetic interpretation and a non-synthetic one—witness *nominal modifier* meaning either 'modifier modifying a noun' (synthetic interpretation) or 'modifier which is a noun' (non-synthetic interpretation). Finally, functional ambiguity arises when adjectives serve more than one different function. Warren's examples include such cases as *short story* meaning either 'a particular type of prose fiction' or 'a story which is brief in its length'. The former is what she refers to as a 'token value' reading, whereas the latter is a

'literal value' reading.

As to the adjectival vagueness, by which Warren means the cases in which an adjective manifests 'notable degree of indeterminacy' (158), she gives the following examples: *silvery moon* (we cannot decide whether *silver* means 'having silver colour', or 'having silver lustre'. Citing Lyons (1977: 19), she observes that though there is no such a phenomenon as lexical ambiguity, [110] examples of lexical vagueness can be found sometimes. After that, she gives such examples as *an old person* and *a big elephant*, in which some elements of degree are involved. In these examples, she concludes that propositional contents, or speakers' commitment can influence the adjectives' vagueness. As to such examples as *professional people* (meaning 'people who have professions and therefore are skilful') and *formal interview* (meaning 'interview being conducted in accordance with forms and therefore stilted'), in which some degree of vagueness is observable in their implied senses, on the other hand, whether an asserted sense can give rise to a contingent sense influences the vagueness of the adjective.

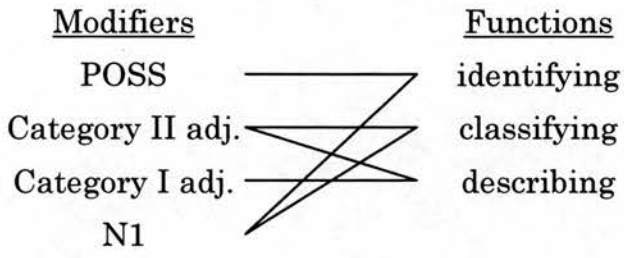
Interestingly, Warren (1988: 132, 135-136) admits two types of adjectives: (a) Category I adjectives which are 'either non-derived or end in *-ful*, *-ish*, *-y*' (135); and (b) Category II adjectives which are 'all derived ending in *-al*, *-an*, *-ar*, *-ic*, *-ly*, *-ous*, etc.' (135). According to her, Category I adjectives are characterised as basic descriptors, whereas Category II adjectives are characterised basically either as descriptors or classifiers. Note that we shall see in 5.3.3 that in English, native suffixes tend to form QAdjs—'descriptors' in Warren's terminology, while Latinate suffixes tend to form RAdjs—'either descriptors or classifiers' in Warren's terminology.

Warren classifies the attributive construction into four types—N1 + N2 combinations, Category I adjective + N combinations, Category II adjectives + N combinations, and POSS + N combinations. Then, she

[110] Usually, researchers resort to polysemy or homonymy instead of admitting lexical ambiguity.

tries to connect them to the three basic functions—identifying, classifying, and describing. The following summarises Warren's conclusion:

(3.47) Modifiers and their functions (Warren, 1988):



Although what Warren means by three functions is not clear in her paper, I think that this conclusion is basically correct. For example, according to Warren's conclusion, POSSs are assumed to have identifying function. In 3.2.5.3, we have seen that the referentiality of the POSS is token-identifying, rather than type-indicating because the POSS has DP inside it. However, her characterisation of N1s as having identifying function is dubious because, as we have seen in 3.2.5, N1s have the same type of type-indicating referentiality as Category I adjectives have.

3.3.1.3. Beard (1991)

The main topic of Beard's (1991) analysis is how bracketing paradoxes[111] of the type *nuclear physicist* should be treated by adopting lexical semantics. His conclusion is that if sublexical semantic decomposition is adopted, the paradox can be accounted for in terms of compositional semantics.

According to Baker, previous solutions to this type of bracketing paradoxes are either restructuring-based solution or the solution based

[111] It is well known that bracketing paradoxes are classified into the following three types; (i) the *unhappier* type, (ii) the *ungrammaticality* type, and (iii) the *transformational grammarian* type. In his paper, Beard (1991) considers the last type, which is different from the former two in that they have double meanings. The former two have often been studied with reference to stratal organisation of phonology/morphology (e.g. LP/M) with inflection and different layers of derivational strata involved, respectively. See Kiparsky (1983), Zwicky (1987), Spencer (1988, 1991: Chapter 10), among others for their treatment.

on proportional analogy. The former, restructuring-based analysis, is seriously flawed because it gives no explanations to such cases as *old friend*, *good athlete*, and *genuine poet*, in which the head nouns are non-derived words. The latter analysis based on proportional analogy hinges on the lexical listedness of the attributive structures and therefore cannot explain the apparent productivity shown by *old/stalwart/weak/major/... friends*, *electrical/ architectural/ fibre-optical/ ergonomic/ ... engineer*, among others.

On the basis of above facts, Beard proposes his lexical-semantic analysis based on sublexical semantic decomposition. Inspired by the new trend of semantic framework developed in the 1980s, he starts by establishing the featural system of lexical semantics. We shall not go into the details of this trend, but the basic tenet is that the meaning or concept can be decomposed into primitive meaning elements, or features. The framework Beard adopts in his paper is a modified version of Jackendoff's (1983, 1987) Conceptual Semantics. First, Beard admits three kids of semantic features; namely, (a) categorical assignment (e.g. THING, ACTOR, EMOTION, ACTIVITY, etc.), (b) function indicators, (e.g. CUT (*XY*), FRIENDSHIP (*XY*), STUDY (*XY*), etc.), and (c) property-representing features (e.g. LARGE (*X*), SHARP (*X*), RED (*X*), HUMAN (*X*), SUDDEN (*X*), etc.). With regard to functional indicators and property-representing features, parenthesised letters show the argument they take. Thus, for example, 'someone (who) studies linguistics, a linguist', 'friendship', and 'a flute' have [STUDY (ACTOR LANGUAGE)], [EMOTION FRIENDSHIP (*XY*)], and [THING$_Z$ PLAY (*XY* INSTR[UMENT]*Z*) MUSIC$_Y$][112], respectively. Then, Beard observes that the difference between WSR and NSR is solved by analysing the former as instances of referential feature modification and the latter as instances of non-referential feature modification in lexical semantics. We have already presented the informal presentation of his proposal in (3.46).

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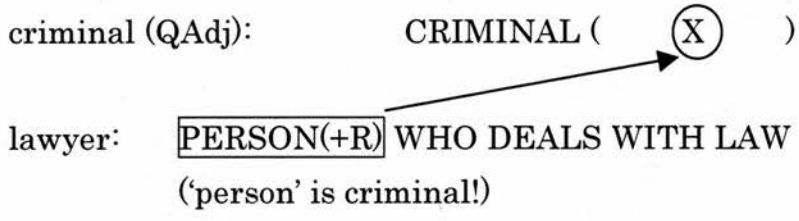
[112] In the Conceptual-Semantic framework Beard adopts, subscripts are used only when more than two arguments are involved.

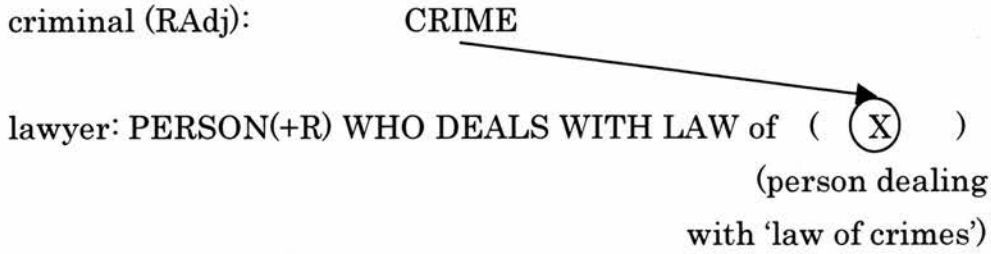
In fact, Beard's proposal seems to cover quite a large area of A + N combinations. It even covers those cases in which adverbial adjectives in the sense of Levi (1978: 7-8) are involved. In *a big eater*, if *big* is related to PERSON (+R), then it undergoes WSR, resulting in the meaning 'eater who is big'; whereas if *big* is related to EATING which is non-referential (–R), then it has NSR, meaning 'person who eats a lot'.

With regard to the difference between RAdjs and QAdjs, Beard observes that it results from how the adjectival meaning connects with the meaning of the head noun. If an adjective is a QAdj, it semantically combines as a predicate with some semantic feature of its head; if it is a RAdj, on the other hand, it selects only one of the semantic features of the head noun and combines semantically with it as its argument. This analysis enables us to give satisfactory explanation to the following two readings associated with the same syntactic configuration:

(3.48) a. a criminal lawyer: 'a lawyer who is a criminal, an unlawful lawyer' (WSR)



b. a criminal lawyer: 'a person who deals with criminal laws' (NSR)



Actually, in my opinion, this analysis of Beard's, combined with Baker's

theory of syntactic categories and my assumption that RAdjs have weak, type-indicating referentiality, can nicely capture the fundamental distinction of RAdjs and QAdjs in English.

3.3.1.4. Relational Adjectives vs. Qualitative Adjectives

As we have seen in 3.2.5.2, according to Baker (2003), the verb is defined as the category having theta-role assigning property, the nouns as the category having index-bearing property, and the adjective as the category having neither of the properties. However, if we look more closely at the adjective, we instantly realise that the adjective is not a homogeneous, monolithic category. Most importantly, in spite of Baker's generalisation, some of their members called RAdjs can function as arguments to the predicative semantic feature of the head, which suggests their possibility to have certain referentiality in spite of Baker's generalisation.

(3.49)[113] a. *Italian* invasion of Albania, the *presidential* refusal/ speech, the *American* attack on Cuba (AGENT)

b. the *dramatic* criticism, the *constitutional* amendment, the *oceanic* study, the *presidential* election, *cardiac* massage (THEME)

c. a *microscopic*/ *stethoscopic* examination, an *electric* calculator, *aural* comprehension, *solar* heating (MEANS)

d. *marine* life, *suburban* houses, *urban* transit, *transatlantic* flight, a *subterranean* explorer (LOCATION)

e. *human* hands, *feline* agility, *bovine* distemper, *departmental* office/ kitchen (POSSESSION/BELONGING)

f. a *metallic* surface, a *leonine* face, the *Wagnerian* style, a *Kurt Weilish* composition (LIKENESS)

g. a *wooden* box, the *logical* process, a *mortal* wound (other relations)

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[113] Most of the examples are taken from Yasui et al. (1974: 87-89). However, there are some more examples added to their list by me.

The examples in (3.49) show the various semantic relations those adjectives have to their head nouns, all of which are argumental in nature. This strongly suggests that RAdjs have some sort of referentiality of their own.

So far as the distinction of RAdjs and QAdjs is concerned, the crucial criterion for the RAdj-hood is the existence of referentiality. QAdjs are adjectives, which have no referentiality. Instead, they can be regarded as general predicators. Their arguments can be referential or non-referential, but QAdjs are always predicators to head nouns' semantic features. RAdjs, on the other hand, are always argumental, which is supported by their referentiality. Note that as Beard (1991) observes, when the BN underlying a RAdj does not serve as an argument to any semantic feature of the head noun, 'a small number of high-level semantic categories' (221) are resorted to in order to provide the meaning of the attributive construction in question. See the following additional examples of RAdj + N combinations, whose semantic relations are provided by them:

(3.50)

	RAdj	*Gloss of RAdj*	*Predication Test*
a.	musical clock	makes music	*the clock is musical
b.	electric clock	uses electricity	*the clock is electric
c.	theatrical dancer	in the theatre	*the dancer is theatrical[114]
d.	presidential matter	for the president	*the matter is presidential
e.	Dalmatian wine	from Dalmatia	?the wine is Dalmatian

Beard (1991: 220)

We should bear in mind that the Elsewhere Condition holds between the cases in which a RAdj fills some argument position of a semantic feature of head noun and the cases in which semantic relations between a RAdj and the head noun is determined by a high-level semantic category.

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[114] *Theatrical* in this example must not be confused with its homophonous QAdj meaning 'behaving in a loud or very noticeable way that is intended to get people's attention' (LDOCE4).

When there are possible inherent features in the head, then, the referential feature of the RAdj relates to it; however, if not, high-level semantic categories apply as a catchall mechanism.

RAdjs' referentiality further explains the following two observations often made by scholars—(i) RAdjs' noun-like nature, and (ii) the lexical nature of RAdj + N combinations. Firstly, as to RAdjs' noun-like nature, which has often been pointed out by such researchers as Marchand (1966), Coates (1971), Levi (1978), and Koshiishi (2002), it automatically follows from Baker's theory that nouns have referential indices and my observation that RAdjs have referentiality of their own.

The other observation—RAdj + N combinations are lexical—has been made by such scholars as Levi (1978), Liberman and Sproat (1992), Sadler and Arnold (1994), ten Hacken (1994), and Giegerich (2005). In many cases, such an observation takes a form of assimilating RAdj + N combinations as compounds. In my opinion, this apparent lexical nature derives from the fact that except for WSRs, sublexical features are difficult to see from syntactic world outside. If being syntactic means being transparent and rule-generated, then, the covertness of NSRs is rather difficult for the syntax to probe into. Note that the selection among the high-level semantic categories is determined on a combination basis and rule-based prediction is impossible. When a combination *presidential assassination* is given, whether the president kills somebody, or the president is killed by somebody is not known without recourse to situational facts.

In fact, this applies not only to RAdj + N combinations but also to the QAdj + N combinations having NSRs. In the NSR of *an old friend*, *old* relates to the non-referential feature FRIENDSHIP in the semantics of the head noun *friend*. This kind of semantic relating is impossible without knowing that some semantic feature of *friend* is combinable with the

predicate OLD(*X*). Thus, in that sense, it is idiosyncratic information peculiar to that combination.

Marx (1983) points out the 'plasticity' of adjectival meaning—i.e. the capacity of adjectives to change their meanings by highlighting particular semantic aspects of head nouns. Lahav (1989), adopting the Keenan and Faltz (1985) framework, presents the same adjectival property as 'non-compositionality of adjectives'. I think that this adjectival property results from the indeterminacy in establishing semantic relations in NSRs.

What, then, are the most syntactic and transparent combinations? —QAdj + N combinations with their WSRs are. Interestingly, such combinations allow predicative usage, which conforms to the observation that most unmarked adjectives are those which have both attributive and predicative usages. My impression is that of all the QAdjs, those with evaluative meanings—e.g. *good*, *bad*, etc.—constitute the most central type. This is because such evaluative adjectives are universal predicators and can function as predicates to any argumental features of the head nouns. Later in 3.3.3, we shall see that many RAdjs start to acquire evaluative meanings and actually shift to QAdjs, which can be considered a natural shift to become most unmarked members of the category.

3.3.1.5. Giegerich (2005)

In his paper (2005), Giegerich observes that RAdj + N combinations are similar to N1 + N2 combinations in that they belong both to the lexicon and to the syntax. According to him, the lexicon is considered to have two functions: (a) it functions as a repository of words (*listemes* in the sense of Di Sciullo and Williams (1987)), and (b) it functions as 'an active component of the grammar called 'morphology'.' LP/M is a theory which aims to grasp the interaction of the above two functions by adopting a stratified model. In LP/M, the most transparent and productive

operations belong both to the syntax and to the lexicon in the final stratum, which makes the two components overlap with each other. N1 + N2 combinations are a case in point.

The same observation applies to RAdj + N combinations in English. RAdjs' non-predicability, non-gradability, and non-modifiability are the facts he gives as evidence for the lexical nature of the combinations. Also, interestingly, RAdjs in this attributive construction do not form APs, which is a big difference from adjectives in predicative uses. These facts, together with strong co-occurrence restrictions held between the RAdjs and the head nouns, suggest that RAdj + N combinations and N1 + N2 combinations are almost identical in their lexical characteristics.

Giegerich, then, gives a semantic consideration of RAdj + N combinations in comparison with N1 + N2 combinations. He admits the following three types of RAdj + N combinations: (A) the *vernal equinox* type, the examples of which are highly lexical in nature, often considered to be fixed combinations; (B) the *cardiac massage* type, the examples of which involve argument-predicate relations; and (C) the *bovine disease* type, the members of which have just relational 'pertaining to X'-type meanings. Interestingly, these three types have their equivalents in N1 + N2 combinations. Type (A) is paralleled by such combinations as *metal bridge* and *mountain peak*; type (B) by such synthetic compounds as *watch maker* and *basket-weaving*; and type (C) by *mosquito net*, *butterfly net*, *hair net*, etc. Note that those belonging to (A) and (B) are immune to pro-*one* replacement, whereas those belonging to (C) are not:

(3.51) a. *Do you mean the autumnal equinox or the vernal one?
b. ?Do you need a back massage or a cardiac one?[115]
c. Is this the bovine strain of the disease or the feline one?
(Examples taken from Giegerich, 2005: 9-10)

[115] Note that pro-*one* replacement is known to apply only to countable head nouns.

Based on these facts, Giegerich claims that at least those belonging to the *bovine disease* type are syntactic. When pro-*one* is possible, the combination undergoes default ascriptive interpretation.

In fact, the above hierarchy can be interpreted in the lexical-semantic terms. Note that there is a crucial difference between referential semantic features and nonreferential ones. The former are the essence of the nouns themselves, whereas the latter are often invisible and are hidden sublexically. In the case of those in which the argument-predicate relations are involved, before the two referential features—i.e. RAdjs' and the head nouns'—are linked by high-level semantic categories, they enter into the argument-predicate relations. Thus, in *cardiac massage*, before the inducing of the high-categories to connect the two referential features, HEART(+R) and ACTION(+R), HEART(+R) fills the thematic position Y of the non-referential feature DO MASSAGE TO(*XY*) in a clandestine way, as it were. Once this sort of covert semantic relation is established between a RAdj and a head noun, the syntax (in this case pro-*one* replacement) cannot intervene between them. In *vernal equinox*, the RAdj's referential feature SPRING(+R) is combined with the head noun's non-referential feature OCCURRING IN(*X*) as its argument. Indeed, in this case, situation is worse than *cardiac massage*; equinox occurs only twice a year; therefore, the relation between *vernal* and *equinox* is frozen and idiomatic,[116] which makes it impossible for the syntax to intervene between them.

Indeed, Beard (1991: 209) already pointed out this kind of semantic difference between WSRs and NSRs as to QAdj + N combinations. He first proposes the following lexical semantic analysis of *old friend*:

[116] As to the frozen nature of *vernal equinox*, Giegerich (2005: 6) gives an interesting observation that *vernal* occurs only with *equinox*, not with e.g. *flowers*, *cabbage*, *weather*, etc.

(3.52)

old	friend
OLDNESS{*Z*}[117]	ACTOR$_X$
	FRIENDSHIP (*X Y*)

In the case of WSR, Z of the predicate OLDNESS{*Z*} is filled by ACTOR(+R), while in the case of NSR, it is filled by non-referential FRIENDSHIP.

Explaining further the difference between the WSR and NSR of *old friend*, he observes that:

> [...] the transparency of WSR is derived from 'the fact that the attribute specifies a feature which does not conflict with the category of the reference of the whole NP; it composes with the category feature of the head noun, ACTOR, and the NP as a whole refers to a category of ACTORs.' (Beard, 1991: 209).

As to NSRs, he points out that:

> [there is...] a conflict between the reference of the feature with which the attribute composes and that of the NP as a whole. The narrow scope attribute composes with a covert, i.e. nonreferential feature, a feature whose reference is an abstract relation, while the NP as a whole refers to a category of concrete objects, ACTOR. (Beard, 1991: 209)

Let us turn back to the attributive construction in general. Giegerich makes it clear that attribution is a syntactic configuration [Mod + Head], but that an adjective's ascriptiveness or associativeness is a matter of lexical semantics. (14). What he means by ascription is denoting 'a property which is valid for the entity instantiated by the noun' (Ferris,

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[117] *X*{*Y*} expresses the '"property of" operator critical for specifying categories in lexical definitions'. *X* (*Y*), on the other hand, expresses an ordinary predicative-argument relation. See Beard (1991: 206).

1993: 24). Association, on the other hand, expresses a property which 'does not apply directly to the denotation of the nominal, but rather to some entity associated with it' (Huddleston and Pullum 2002: 556).

Though I think this is on the right track, it would be better for this analysis to be further amended by another parameter proposed by Beard, which is WSR vs. NSR. In the Beardian analysis, the relationality-qualitativity scale is matched by the scale of scope interpretation—i.e. WSR vs. NSR. Relationality means a modifier's relevance as an argument to one of the semantic features of the head noun, whereas qualitativity means its relevance as a predicate to one of the semantic features of the head noun. Remember that in WSRs, referential features of the head nouns are related by the modifiers, while in NSRs, nonreferential features are; and then we can get the following four-way semantic classification of the attributive construction as shown in (3.53).

(3.53) Beardian Semantic Parameters of Attribution with Examples

	Relational (functioning as arguments)	Qualitative (functioning as predicates)
WSR (referential feature-relating)	*musical clock* *bovine disease*	*old friend* 'aged friend' *beautiful flower* *big eater* 'big person who eats'
NSR (nonreferential feature-relating)	*cardiac massage* *vernal equinox*	*old friend* 'member of old friendship' *big eater* 'person who eats a lot'

Given above discussion, Giegerich's and Ferris' notion of ascription can now be given more precise characterisation as [+Qualitative, +WSR].

Giegerich's second argument for the overlapping nature of the syntax and the lexicon comes from stress phenomena. After reviewing briefly the previous literature on stress, he first points out that there are noteworthy parallels between the stress behaviour of RAdj + N combinations and N1 + N2 combinations. The most important generalisation is that being fore-stressed indicates the lexical nature of the combination in question. If this is the case, then, certain fore-stressed RAdj + N combinations such as *polar bear*, *solar panel*, *postal service*, etc. are simultaneously characterised as phrases in pro-*one* replacement and as compounds in stress behaviour. Giegerich argues that this clearly shows that these combinations simultaneously belong both to the syntax and to the lexicon.

I agree with this argument of Giegerich's. This is exactly the area in which we find the mismatch between adjectival morphology and nominal semantics. RAdjs are categorially adjectives but having referentiality of their own. The way this referentiality interacts with the sublexical semantic features of the head noun influences their lexical/syntactic nature.

3.3.1.6. Lieber (2004)

Like Beard, Lieber (2004) also considers that lexical-semantic analysis is crucial. According to her, semantics of word-formation should be: (a) decompositional, (b) lexical-semantic, (c) cross-categorial, and (d) applicable non-discriminatorily both to complex words and to simplex lexemes. After reviewing several previous works such as Jackendoff's (1972, 1983, 1987, 1990, 1991, 1996) Lexical Conceptual Structure, Wierzbicka's (1972, 1980, 1985, 1988, 1996) Natural Semantic Metalanguage, Pustejovsky's (1995) Generative Lexicon, Szymanek's (1988) Cognitive Grounding Condition, Beard's (1993, 1995) Lexeme-Morpheme Base Morphology, etc., she introduces her own lexical-semantic theory of word formation. Firstly, she insists that non-inflectional word formation serves to create lexemes and in so doing, it extends the simplex lexicon. Secondly, she observes that lexical

semantic representations are composed of two parts: (A) what she calls *Semantic/Grammatical Skeleton* (or skeleton, for short), which is decompositional and hierarchical in nature and (B) what she calls *Semantic/Pragmatic Body* (or body, for short), which is non-decompositional, is not composed of primitives, and is composed of 'those bits of perceptual and cultural knowledge that form the bulk of the lexical representation' (10). Using an anatomical metaphor, she further explains as follows:

> The skeleton forms the foundation of what we know about morphemes and words. It is what allows us to extend the lexicon through various word-formation processes. The body fleshes out this foundation. It may be fatter or thinner from item to item, and indeed from the lexical representation of a word in one person's mental lexicon to the representation of that "same" word in another individual's mental lexicon. But the body must be there in a living lexical item. Bodies can change with the life of a lexical item—gain or lose weight, as it were. Skeletons, however, are less amenable to change. (Lieber, 2004: 10)

Thirdly, Lieber claims that the semantics of word formation has the effect of creating one single referential unit out of two distinctive semantic skeletons either by juxtaposing them (in the case of compounding) or by subordinating one of them to the other (in the case of derivational affixation).

After establishing her own feature system which is cross-categorial in nature in Chapter 1 of her book, she starts to explain the central part of her lexical semantics, the theory of co-indexation. Lieber assumes that new word creation always involves 'the integration of multiple parts into a single referential unit' (45). This is 'in order to tie together the arguments that come with different parts of a complex word to yield only those arguments that are syntactically active' (45), as she puts it.

Lieber, then, applies this co-indexation theory to English N1 + N2 combinations. She divides them into four patterns: (A) **copulative** (dvandva) **combinations** (e.g. *clergyman-poet*), (B) **endocentric combinations** (i.e. root compounds; e.g. *dog bed*), (C) **exocentric** (bahuvrihi) **combinations** (e.g. *redhead*), and (D) **synthetic combinations** (e.g. *truck driver*). Central to her claim is the observation that the N2 is the head of the combination and the whole combination has a single referent by the Principle of Co-indexation,[118] which enables us to tie the two stems together into one. Once this is done, all the rest is free and is to be determined by some other factors—which are often supplied from context or knowledge of the world.[119]

First, as to **copulative** (dvandva) **combinations** (A), both stems—i.e. N1 and N2—have identical skeletons and therefore they both share major semantic attributes. Note that the N1s in them are 'ascriptive' in the terminology of Huddleston and Pullum's (2002) and Giegerich's (2005). In the case of *clergyman-poet*, both *clergyman* and *poet* share such features as <natural> and <human>; thus, Lieber claims that they can be easily regarded as the same entity by the Principle of Co-indexation.

With regard to **endocentric combinations** (root compounds)—(B) above, co-indexing forces a stem merger so that the N1 is construed as something which has some plausible relationship to the N2. Note that in endocentric combinations, semantic bodies of the stems are different from those in copulative combinations because they do not share so many attributes in their semantic bodies. In the case of *dog bed*, *dog* has the

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[118] Lieber states the Principle of Co-indexation as follows:

> In a configuration in which semantic skeletons are composed, co-index the highest nonhead argument with the highest (preferably unindexed) head argument. Indexing must be consistent with semantic conditions on the head argument, if any.
>
> Lieber (2004: 61)

[119] Citing Selkirk (1982: 22), Lieber (2004: 48-49) observes that a set of 'high-level semantic categories' (Beard, 1991: 221) is not enough to explain the full variety of semantic relations found in N1 + N2 combinations.

feature <natural>, whereas *bed* has the feature <artefact> and they share virtually no features in common. However, since the Principle of Co-indexation requires that the N1 should in some way contribute semantically to the N2, which is the head of the whole structure, the semantic properties of N1, in this case *dog*, has semantic contribution to the head *bed* adding to it such relational meaning as 'relating in some way to dogs'.

As to (C), **exocentric** (bahuvrihi) **combinations**, she claims that they are interpreted exactly the same as endocentric combinations. However, adopting Booij's (1992) framework, she ascribes the exocentric meaning of the combination to their having received metonymic interpretation. Thus, *redhead* is syntactically the same as the above *dog house*, whereas its meaning is now interpreted as a metonym and now it means 'a person who has red hair'.

Finally, with regard to (D), **synthetic combinations**, [120] Lieber considers that since the N2 is deverbal, the N1 is first co-indexed with the internal argument of the verbal element of the N2. For example, *truck driver* is analysed in her framework as follows:

(3.54) [+ material ([$_j$])] [+ material, dynamic ([$_i$], [+ dynamic ([$_i$], [$_j$])])]
truck *-er* *drive*
Lieber (2004: 55)

In (3.54), *truck* is co-indexed with the internal argument of *drive*—you see, both are given the same index 'i'— which gives the *truck* its 'drivee' interpretation; and then, the affix *-er* is co-indexed with the external argument of *drive* and the whole combination gets its referentiality from the affix *-er*.

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[120] Many researchers including her have given them a structural explanation in the past—witness Roeper and Siegel (1978), Lieber (1983, 1992), Selkirk (1982), Roeper (1988), to mention a few. See Spencer (1991: §8.3), Lieber (2005: 379-383) for concise summary of the various approaches to English synthetic compounds.

Interestingly, the Principle of Co-indexation, Lieber (2004: 60) claims, is a violable principle. Therefore, the usual reading of truck driver is 'a person who drives a truck', but it can mean, for example, 'a driver who is wearing a shirt with a picture of a truck on it.' Then, the internal argument of drive is left un-co-indexed and the normal interpretation of an endocentric combination is applied, as (3.55) shows:

(3.55) [+ material ([$_i$])] [+ material, dynamic ([$_i$]), [+ dynamic ([$_i$], [ ])]]]
truck *-er* *drive*

Lieber (2004: 60)

Lieber does not mention this possibility by herself, but she should have resorted to the Elsewhere Condition to explain this case. The interpretation provided by the 'catchall' mechanism using a high-level semantic category is suppressed if the 'internal argument' interpretation is possible.

Lieber (2004: 35ff.) assumes that there are nine classes of derivational affixes in English, as (3.56) shows below:

(3.56) Classes of English Derivational Affixes[121]

Affixal skeleton	Examples	Traditional names
[+material, dynamic ([ ], <base>)]	*-er, -ee, -ant/-ent, -ist*	Agent- (or recipient-) forming affixes
[–material, dynamic ([ ], <base>)]	*-ation, -al* (as in *refusal*), *-ment, -ance, -ure*	(Dynamic) abstract-noun forming affixes
[+material ([ ], <base>)]	?*-ware*, [compounding]	Material-name-forming affixes/compounds
[–material ([ ], <base>)]	*-ness, -ity, -hood, -ship, -ism*	(Static) abstract-noun forming affixes

[121] I provide the traditional names in (3.56).

[+dynamic ([ ], <base>)]	[conversion]	Expressing simple activity
[–dynamic ([ ], <base>)]	*-ic, -ive, -ary, -al* (as in *architectural*), *-ous, -y*	RAdj-forming affixes
[+dynamic, +IEPS[122] ([ ], <base>)]	[conversion]	Expressing unaccusatives/inchoatives
[+dynamic, –IEPS ([ ], <base>)]	[conversion]	Expressing manner of change
bipartite skeleton	*-ize, -fy*	Causative-forming affixes

Cf. Lieber (2004: 39)

Lieber observes that affixal selection is determined by 'the co-indexation properties of the affixal argument in each case' (61). In the case of agent- (or recipient-) forming affixes in (3.56), Lieber points out that though the basic semantic contribution of the five affixes is the same, their actual selection has to obey some requirements sometimes. Thus, *-ee* requires its base to be strictly sentient and preferably volitional[123] and *-ist* requires its base to be strictly sentient, *-er* and *-ant*/*-ent*, on the other hand, have no such requirement. As to such forms as *loaner*, *keeper*, *diner*, *sleeper*, *jotter*, *stroller*, *walker*, etc., she ascribed them to paradigmatic and pragmatic pressure of some sort. See Booij and Lieber (2004) for this argument.

Before closing this subsection, I would like to point out three interesting points about her lexical-semantic analysis: Firstly, Lieber follows Williams (1981) and Higginbotham (1985) in her claim that all major lexical categories are argument-taking. According to Williams (1981: 86), nouns take at least one argument called 'R' (for referentiality) argument. Williams characterises it as the external argument of a noun and it may be discharged either (a) by linking with a determiner or (b) by linking with

[122] IEPS means 'inferable eventual position or state'. See Lieber and Baayen (1997) for further explanation of this notion.

[123] See Barker (1998) for similar semantic characterisation of the suffix *-ee*.

an NP of which it is predicated. In 3.2.5.2, we have seen that Baker's NLC requires nouns to have a relational task of binding structures together and tracking sameness and difference by using their referentiality. Indeed, this argument-taking nature of the noun can be regarded as a result from Baker's NLC.

Secondly, as to so-called 'picture' nouns in which the argument-predicate relations are not morphologically expressed but covertly hidden, Lieber assumes some dynamicity in their featural compositions. However, she assumes that a COMPLEX EVENT reading requires positive value for the [dynamic] feature, while a RESULT reading requires the negative value for the [dynamic] feature.[124] In the case of *picture*, it can be regarded as a result of painting and has to have the feature [-dynamic ([ ], [ ])]. But this means that though *picture* is not dynamic, it still has two argument positions—just like the verb *know* analysed as having the feature [-dynamic ([ ], [ ])]. In Beard's framework, *picture* is simply given the feature [THING$_Y$ PAINT (X Y)] and the fact that it has a covert argument-predicate relation is easily expressed.

Thirdly, given that featural system of Lieber's, the category adjective is analysed as closer to the verb than to the noun. This is because she proposes that the most fundamental distinction should be made between the semantic category comprising SUBSTANCE/THING/ESSENCE and the semantic category comprising SITUATIONS and the noun belongs to the former category while the verb and the adjective belong to the latter. However, given this characterisation of the adjective, the distinction

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[124] Following the lead of Grimshaw's (1990: 50-53), Lieber observes that a COMPLEX EVENT reading occurs when the noun in question occurs with temporal adjectives like *constant* and *frequent* as in (i), while a RESULT reading occurs when the noun has some countability as in (ii).

(i) The frequent expression of one's feeling is desirable.

(ii) The assignments took a long time.

(Examples are taken from Lieber (2004: 28).)

between QAdjs and RAdjs is not clear. Lieber (2004: 180) herself admits that her featural system does not reflect their distinction.

3.3.2. Bracketing Paradoxes and Lexical Semantics

The type-indicating nature of RAdjs' referentiality can also explain certain 'bracketing paradoxes' such as *baroque flautist, transformational grammarian*, etc. Beard (1991) studies these phenomena and concludes that they all obey what he calls the Abstractness Criterion. According to him, acceptable examples are those in which the inherent features of the underlying nominals are abstract.

(3.57) a. baroque flautist, transformational grammarian, Modern Linguist
b. *long flutist, *silver flutist, *good grammarian

Examples in (3.57a) are those in which RAdjs are involved, whereas those in (3.57b) are the examples in which QAdjs are involved. Interestingly, Beard gives the following examples in which modifiers seem to have undergone some semantic transfer or shift:

(3.58) hot flutist, great flutist, jazz flutist, classical flutist

Note that in these examples, adjectives or an N1 relates to the kinds of music, rather than the special kinds of flutes—i.e. *a hot flutist* means a flutist playing hot music, etc. This shows that adjectival meanings in these examples are instances of some sort of semantic transfer. Huddleston and Pullum (2002: 558-559) list such examples as *a quiet cup of tea, a drunken brawl*, etc., which are semantically similar to the examples in (3.58).

Why are the examples in (3.57b) ungrammatical? I think that one of the reasons can be ascribed the fact that they all have QAdjs. QAdjs functions as predicates to semantic features of the head nouns. Also, we

should bear in mind that the ungrammaticality of the (3.57) examples can be derived from the impossibility of the non-referential features to become arguments of the predicates to the exclusion of the referential features. If X of LONG(*X*) were filled by FLUTE, *long flute* has to be preceded by the article *a* or *the* to form a DP. However, in *a long flutist*, *a* has to be related to the flutist, not to the flute. This means that Beard's Abstractness Condition is proposed for banning the doubling of determiners. Note that **[a [a long flut]ist]* is ungrammatical. In the examples in (3.57a), adjectives are RAdjs, so they only relate to non-referential features of the head nouns as arguments. Thus, *a baroque flutist* is 'a player of the flute which is in some way related to baroque', *a Modern Linguist* is a person who studies languages related to contemporariness'. In the examples of (3.58), it is obvious that the QAdjs relates to non-referential arguments of the head nouns. They all relate to some genre or style of music, rather than the flutist. Therefore, we have no problem of doubling of the referents in them.

One question which is worth considering, then, is: what happens if QAdjs in (3.57b) relate to non-referential features? I think that the resulting bracketing paradoxes turn out to be grammatical. For example, if there were a special music genre called *silver music* in which every player plays silver instruments, then, *silver musician* would turn out to be grammatical.

3.3.3. Semantic Shift from Relational Adjectives to Qualitative Adjectives

Finally, we shall see the semantic shift from RAdjs to QAdjs. In Koshiishi (2002: 72), I assume that the following is the general semantic shift CAs undergo:

(3.59) Semantic change of CAs: a general schema
Set phrase of the type CA + N > CA + other N > predicative use of CAs

When CAs are first introduced to English, they are introduced as part of set phrases or compounds of the type CA + N. Then, there comes a stage in which CAs are abstracted from the set phrases and can be attached to other nouns. And finally, there comes a time when they are predicativised and can be used as predicative adjectives.

This is exactly what has happened to the semantics of *vernal*. According to OED, the first several examples of *vernal* are all found in the set phrase *vernal equinox* (or *equinoctial*). OED dates the very first example back to 1534 (More *Treat. Passion* Wks. 1308/1 The xiiii. daye after theyr vernall Equinoctiall in the euenynge.). Then, the use of *vernal* started to be applied to other nouns, as is shown by other examples such as the one dated 1611 (Beaum. & Fl. *Maid's Trag.* i. ii, We must have none here But vernal blasts, and gentle winds appear.), etc. The first example in which this CA was used predicatively is dated 1634 (Sir T. Herbert *Trav.* 4 Such time as the Sunne is vernall, [the Island of Ferro] becomes exceeding hot and scalding.).

In fact, the same shift is expected to happen to RAdjs in general. Farsi (1968) studies this extensively. Firstly, he recognises the existence of three different groups of adjectives which have BNs.[125] He refers to these three groups as Class A, Class B, and Class C.

The following diagnostics are what he uses to distinguish between the first two types: (a) meaning, (b) selection of negative prefixes, (c) *very*-qualification, (d) coordinatability with other adjectives, and (e) relative position in a DP. (3.60) shows what he refers to as Class A and Class B adjectives:

[125] I do not refer to them as RAdjs because Class B and Class C adjectives have properties of QAdjs.

(3.60) Class A and Class B Adjectives:

	Class A	Class B		Class A	Class B
1.	affective	affectionate	2.	appositive	apposite
3.	behavioural	mannerly	4.	bibliographic	bookish
5.	cardiac	hearty	6.	causal	effectual
7.	ceremonial	ceremonious	8.	commemorative	memorable
9.	conceptual	thoughtful	10.	connective	coherent
11.	consonantal	consonant	12.	continental	continent
13.	corrective	correct	14.	cultural	cultured
15.	deductive	seductive	16.	dental	toothsome
17.	devotional	devout	18.	doctrinal	docile
19.	durative	durable	20.	elective	eligible
21.	entrepreneurial	enterprising	22.	evaluative	valid
23.	experiential	experienced	24.	factual	accurate
25.	fiduciary	faithful	26.	financial	lucrative
27.	genealogical	genteel	28.	generative	degenerate
29.	generic	generous	30.	governmental	ruly
31.	gustatory	tasteful	32.	inflexional	flexible
33.	interrogative	inquisitive	34.	intonational	tuneful
35.	juridical	just	36.	legislative	legitimate
37.	manual	handy	38.	mental	sane
39.	methodological	methodical	40.	modal	modish
41.	morphological	shapely	42.	nutritional	nutritious
43.	observational	observant	44.	olfactory	savoury
45.	optical	sightly	46.	ostensive	ostentive
47.	palatal	palatable	48.	pecuniary	pecunious
49.	pedagogic	pedantic	50.	penitential	penitent
51.	perceptual	perceptive	52.	pictorial	picturesque
53.	residential	homely	54.	retributive	rewarding
55.	semantic	significant	56.	sensory	sensitive
57.	sociological	sociable	58.	stylistic	stylish
59.	supervisory	watchful	60.	syntactic	orderly
61.	tactile	tactful	62.	temporal	timely

63.	theological	godly	64.	urban	urbane
65.	verbal	verbose	66.	verificatory	veracious
67.	visual	conspicuous	68.	vocalic	equivocal
69.	vocative	provocative	70.	volitional	willing

(Farsi, 1968: 46)

As to (a), Class A As are descriptive in meaning, while Class B As are evaluative. For example, *affective* (Class A) means 'relating to or having an effect on the emotions' (LDOCE4), which is neutral semantically, while *affectionate* (Class B) has a eulogistic meaning 'showing in a gentle way that you love someone and care about them' (LDOCE4). As to (b), the negative prefix that Class A As take is *non-*, whereas Class B As take *un-*, *in-*, or *dis-*, as is witnessed by e.g. *noncardiac* (Class A) but *unhearty* (Class B). As to (c), Class A As cannot be modified by *very* (e.g. **very cardiac*), whereas Class B As can (e.g. *very hearty*). With regard to coordinating possibility (d), only adjectives of the same class can be coordinated (e.g. *verbal and stylistic experiments* (both Class A), *cultured and urbane guardians* (both Class B), but **verbal and modish experiments* (Class A and Class B)). Finally, as to (e), Class A adjectives are located nearer to the head noun than Class B Adjectives; thus, you can say *an old cardiac complaint* (*old* < Class A)[126] is all right, but you have to say *a hearty old man* (Class B < *old*).

What is interesting about Farsi (1968) is that he assumes that there is a third class of adjectives, Class C adjectives, which are double-faced in nature. Examples of Class C As are the following:

(3.61) Class C Adjectives:

academic	aesthetic	American	artistic
British	Christian	cinematic	civil
constitutional	conventional	critical	demonstrative
diplomatic	dramatic	emotional	English

[126] Symbol < shows linear precedence. X < Y means X precedes Y.

ethical	formal	French	grammatical
historical	human	legal	literary
logical	Marxian	moral	musical
parliamentary	philosophical	poetic	professional
rational	religious	royal	sanitary
scientific	social	spiritual	theatrical

Farsi (1968: 51)

These Class C adjectives have the following properties:

(i) They both have descriptive and evaluative meanings (e.g. *legal* 'of law' and 'lawful');

(ii) In the descriptive meanings, they take *non-* (e.g. *non-legal* meaning 'not related to law'), whereas in their evaluative meaning they take *un-*, *in-*, *dis-* (e.g. *il-legal* meaning 'not allowed by the law');

(iii) Only in the descriptive meanings, they can be modifiable (cf. *very illegal*, but not **very non-legal*);

(iv) In the descriptive meanings, they can only be coordinated with Class A adjectives (e.g. *aesthetic and stylistic criticism*), whereas in the evaluative meanings, they can only be coordinated with Class B adjectives (e.g. *aesthetic and stylish arabesques*); and

(v) In the descriptive meanings, they follow an adjective of age (e.g. *a new legal advisor*), but in the evaluative meanings, they precede it (e.g. *a perfectly legal new venture*).

What is striking about Farsi (1968) is his observation that shifts are normally observable from Class A to Class B adjectives through the stage of Class C adjectives. He observes that an adjective first has a descriptive meaning 'concerning X'. Then, it gradually acquires in addition an evaluative meaning 'worthy of X', and becomes a Class C adjective. He does not give detailed study on the shift from Class C to

Class B adjectives; however, judging from the fact that nowadays, such adjectives as *significant*, *legal*, *insular*, to mention only a few, are predominantly evaluative, which clearly shows that shift is underway in the direction of becoming Class B adjectives.

Indeed, this observation conforms to my diachronic observation concerning CAs in (3.59). Note that this general diachronic semantic path can be regarded as the shift from the simple labelling stage in which the referentiability function is highlighted to the value-assessing evaluation stage in which the predicability function comes to be highlighted. All the syntactic and morphological facts simply follow from this path.

Warren (1984: Chapter 5) also considers the semantic shifts of RAdjs. Citing Stern (1931), Dik (1972), and Grice (1975), she establishes the following rule concerning the semantic shifts:

> If, from the fact that X is true of some noun, it follows, or is likely, in a particular context that this noun has property Y, then Y may be the meaning of the adjective in question.
>
> X = the unextended meaning of the adjective
> Y = concomitant property
>
> Warren (1984: 36-37)

According to her investigation, as much as 27% of the total number of the occurrences of adjectives has been judged to be the result of semantic shifts. In Appendix II (299ff.) she lists all the instances of the semantic shifts of RAs ending in *-al*, *-an*, *-ar*, *-ic*, *-en*, *-ern*, and *-ly*.

If we limit the scope to CAs, the following CAs are marked with usage labels showing some kinds of evaluative meanings in COB3:

(3.62) a. Adjectives with the label DISAPPROVAL in COB3:
histrionic, infantile, bovine, querulous, rustic, dictatorial, elephantine, formulaic, glacial, insular, parochial, servile, saccharine

b. Adjectives with the label EMPHASIS in COB3:
diabolic, diabolical, graphic, infernal

c. Adjective with the label APPROVAL in COB3:
feminine

The above findings clearly show that the general semantic shift from RAdjs to QAdjs previously discussed is surely underway even now.

Several remarks are in order before we close this section. Firstly, we can give a sublexical decomposition-based explanation for this RAdj-to-QAdj shift. We have seen in 3.3.1.3, that the most syntactic and transparent type of attributive construction is composed of those which have QAdjs in their modifier position and have WSRs. This is because the sublexical semantic relevance of adjectives to the referential features of the head nouns is transparent, whereas their sublexical relevance to nonreferential features of the head noun is not. Remember that their sublexical relevance to non-referential features found, for example, in synthetic attribution is syntactically opaque in nature, as is shown by the ungrammaticality of the pro-*one* replacement. Moreover, we have seen that of all the QAdjs, those with evaluative meanings can relate to almost any semantic feature. Such adjectives as *good*, *bad*, and *nice* can modify almost any noun. This can be supported by the frequently made observation from linguistic universal and linguistic typology that they are the most unmarked adjectives and languages normally do not lack them. Therefore, this shift can be regarded as a part of general trend of marked adjectives to become unmarked ones.

Secondly, though the above observation has diachronic implications, we find many cases in which certain adjectives institutionalise their

relational or evaluative meanings, which suggests that it has also synchronic implications as well. Lieber (2005: 414-415) points out that the suffix *-al* favours relational meanings, though the possibility of evaluative meanings is not completely excluded; whereas such suffixes as *-ed*, *-esque*, *-ish*, *-ous*, *-some*, and *-y*, in contrast, seem to be evaluative in their meanings. Generally speaking, native suffixes are predominantly evaluative in comparison with adjectives of Latinate origin.

Thirdly, this semantic shift is applied on an item-by-item basis and often semantic or stylistic factors are found to have some influence on it. Actually, there are various degrees to which RAdjs undergo this shift. At one extreme, there is a group of RAdjs which are not affected by such shift. For example, such 'anatomical', 'biological, or 'chemical' RAdjs as *crural* (~ thigh), *renal* (~ kidney), *labial* (~ lip), *ferric* (~ iron), and so on, are comparatively immune to this semantic change. At the other extreme, there is a group of 'animal-name' RAdjs which are familiar to humans; and they are prone to become QAdjs—as is witnessed by *feline* (~ cat) 'having graceful looks or movements of a cat' (MED), *bovine* (~ cow) 'slow and slightly stupid, like a cow—used to show disapproval' (LDOCE4). Interestingly enough, those which are not so familiar such as *psittacine* (~ parrot), *limacine* (~ slug), *sciurine* (~ squirrel), and *phocine* (~ seal) are not prone to become QAdjs.

One interesting example is *orthogonal* (~ right angle). As is evident from the following examples, this RAdj has now semantically shifted to mean 'mutually independent, totally irrelevant to, having no relation to':

(3.63) a. [...] Thus these distinctions are *orthogonal* to the matter of scope. (Beard, 1991: 200 [italics mine])

b. The distinction between RAdjs and QAdjs is thus *orthogonal* to the problem of those bracketing paradoxes which arise with denominal adjectives. (Lieber, 2005: 414 [italics mine])

As we shall see later in 4.5.2, dictionaries are generally ignorant about this meaning coming probably from hacker's slang. However, *The Hacker's Dictionary of Computer Jargon* (an online dictionary: http://www.worldwideschool.org/library/books/tech/computers/TheHackersDictionaryofComputerJargon/Chap0.html) has the following entry for *orthogonal*:

> **orthogonal**
>
> [from mathematics] adj. Mutually independent; well separated; sometimes, irrelevant to. Used in a generalization of its mathematical meaning to describe sets of primitives or capabilities that, like a vector basis in geometry, span the entire 'capability space' of the system and are in some sense non-overlapping or mutually independent. For example, in architectures such as the PDP-11 or VAX where all or nearly all registers can be used interchangeably in any role with respect to any instruction, the register set is said to be orthogonal. Or, in logic, the set of operators 'not' and 'or' is orthogonal, but the set 'nand [sic]', 'or', and 'not' is not (because any one of these can be expressed in terms of the others). Also used in comments on human discourse: "This may be orthogonal to the discussion, but...."
>
> (http://www.worldwideschool.org/library/books/tech/computers/TheHackersDictionaryofComputerJargon/chap38.html)

Also importantly, we often see the acceptability of evaluative meaning of adjectives fluctuate from person to person. Farsi (1968: 58) observes that some people see such adjectives as *ethical* and *aesthetic* as pure RAdjs (i.e., meaning 'concerning beauty', 'concerning right or wrong', respectively), while others use them both as RAdjs and as QAdjs. For such people, their evaluative meanings are 'beautiful' and 'not wrong or immoral', respectively. Actually, this all can be regarded as the process whereby RAdjs simply lose their RAdj features in the lexical semantics

over time and become unmarked, ascriptive QAdjs.[127]

3.4. The Nature of Relational Adjectives: Summary

In this section, I would like summarise the discussions in this Chapter.

First of all, I agree with Baker's (2002) view that the verb and the noun should be analysed as theta-role assigning and index-bearing categories, respectively. In fact, this analysis provides a good support for J. M. Anderson's (1997) referentiality-predicability scale. As to the category adjective, however, my opinion diverges from Baker's. Though Baker analyses the category adjective as [–N, –V], I admit two further subtypes, QAdjs and RAdjs in adjectives; QAdjs are [–N, –V], whereas RAdjs are [+N, –V]. This is because RAdjs have what I call 'weak', 'type-indicating' referentiality and can be generic arguments of the deverbal head nouns. The following table shows my analysis in comparison with others:

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[127] In the following example, the adjective *local* may be considered halfway to the QAdj to mean 'very close to us', or 'as if they happened in our living rooms':

> In the last generation of the 20th century, all revolutions are *local*. Technology assures that whatever struggle occurs—in the streets, the factories, and the schools—it reaches living rooms all over the world.
>
> (*Time*, December 3, 1990 [italics mine])

Of course, it is not necessary for dictionaries to have such a meaning under the lemma *local*, but we should note that when RAdjs are used predicatively, they are likely to undergo such semantic shift.

(3.64)

	N	A		V
		RAdj	QAdj	
J. M. Anderson (1997)	{N; P}	{P: N}		{P; N}
Koshiishi (2002)	{N; P}	{(P; N); (N: P)}	{(N; P); (N: P)}	{P; N}
Baker (2003)	Index-bearing ([+N])	Neither index-bearing nor theta-role assigning ([–N, –V])		Theta-role assigning ([+V])
Koshiishi (present thesis)	Index-bearing ([+N])	Index-bearing but not theta-role assigning ([+N, –V])	Neither index-bearing nor theta-role assigning ([–N, –V])	Theta-role assigning ([+V])

Secondly, as to referentiality, RAdjs' referentiality is analysed as 'weak', 'type-indicating referentiality', rather than the 'strong', 'token-identifying' referentiality seen, for example, in DPs. Note that they have determiner-like elements inside them so that they can function as antecedents for pronominal anaphora. RAdjs, on the other hand, do not have determiner-like elements inside of them, which is why they can only function as arguments to argument-taking elements covertly hidden in head nouns.

If we compare RAdjs with QAdjs, POSSs, N1s, and PPs, the following observations can be made:

1) As to QAdjs (e.g. *a <u>beautiful</u> flower*), they have no referentiality of their own. Hence, they can function neither as antecedents for pronominal elements, nor arguments to argument-taking elements.

2) POSSs have to be divided into at least two classes: (A) ordinary POSSs (e.g. *the king of France's daughter*), which are often referred to as 'determinative genitive' (Yasui, et al., 1974: 35) and (B) POSSs of description (e.g. *the obvious printer's errors*), referred to as 'descriptive genitive' by Huddleston and Pullum (2002: 469-470). In the former, since *-'s* is attached to the edge of DPs (hence, traditionally called 'group genitive'), the whole structure has the 'strong', 'token-identity' referentiality.

3) N1s have similar syntactic and semantic characteristics as RAdjs. They have the 'weak', 'type-indicating' referentiality and often enter into free variation with RAdjs—as is witnessed by *bovine/cow disease*.

4) PPs (e.g. *the assassination of the president by Oswald*) have the 'strong', 'token-identifying' referentiality because they have DPs inside of them which are headed by determiners. Note that various semantic relations are overtly expressed by prepositions. One does not have to resort to 'high-level semantic categories' (Beard, 1991: 221) to get their meanings. However, a certain hierarchy can be observed concerning the grammaticalised nature of prepositions with the preposition *of* at the top; those prepositions expressing case relations (*for*, *by*, *in*, *on*, *about*, etc.) in the upper layer; and those being rather lexical, expressing adverbial relations of various sorts (*against*, *behind*, *through*, etc.) at the bottom. Interestingly, *of*-PPs function as a catchall PP in many cases. Normally their meaning is given by the 'high-level semantic categories'; however, with the presence of other PPs which are more lexical in nature, *of*-PP's meaning is determined to the exclusion of their meanings. Therefore, in *the assassination of the president by Oswald*, the *of*-PP cannot express the agent because of the presence of the *by*-PP which expresses the agent.

(3.65) and (3.66) summarise the above observations:

(3.65) Modification Types and Referentiality

a. QAdjs: having no referentiality of their own.

b. RAdjs, POSSs, N1s, and PPs: having different types of referentiality. See the table in (3.66):

(3.66) Referentiality types and RAdjs, POSSs, N1s and PPs

Referentiality types	
'Strong', 'token-identifying' referentiality	'Weak', 'type-indicating' referentiality
PP (= P + DP) Determinative POSS	Descriptive POSS RAdj N1

Baker (2003: 202) observes that the attributive construction is a syntactic combination of heads, whereas N1 + N2 combinations happen in the morphological component, apart from the syntax. However, as Giegerich (2005) suggests, the attribution in which N1s and RAdjs are involved, overlapping nature of the syntax and the lexicon is observed.[128] The same thing can be said about descriptive POSSs as well.

Thirdly, as to the semantics of RAdjs, I adopt a sublexical decompositional semantic analysis, following the lead of Beard (1991) and Lieber (2004). Just as Beard (1991) points out, the difference between WSRs and NSRs is ascribed to the relevance of the head noun's referential feature. If a modifier's feature relates to the head noun's referential feature, then, the attributive construction in question has a WSR, whereas if it relates to the non-referential feature of the head noun, then, it has a NSR. As to the difference between RAdjs and QAdjs, I also adopt a Beardian approach.

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[128] Following the lead of Sadler and Arnold (1994), Bennett (2002) admits two level of lexicality in N1 + N2 and adjective + N combinations. According to him, N1 + N2 and RAdj + N combinations are 'strongly lexical', while QAdj + N combinations are 'weakly lexical'. His conclusion in his paper is: [t]he head of a strongly lexical (morphological) structure cannot consist of constituents whose combination is weakly lexical (zero-level, but syntactic).' (6). Indeed, *used car business*, *solar system diagram* are both all right, while **shoe big shop* is not.

In the case of RAdjs, one of its semantic features enters into an argument relation with one of the features of head noun which is a predicate, whereas in the case of QAdjs, it enters into a predicate relation with one of the head noun's features which is an argument.

See the following in which the above discussions are illustrated by examples:

(3.67) WSRs vs. NSRs and RAdjs vs. QAdjs

	RAdjs	QAdjs
WSRs	*presidential limousine* 'limousine for the president'	*old friend* 'a friend who is old'
NSRs	*presidential assassination* 'the fact that the president was killed'	*old friend* 'a person whom one has known for a long time'

Note that in WSRs in which an adjective's semantic feature relates to the referential feature of the head noun, the relation between the head and the modifier is transparent in the sense that the head noun itself is the referent. Whereas in NSRs, in which an adjective's semantic feature relates to a non-referential feature of the head noun, its semantic relation is hidden from outside because the head feature is non-referential.

Fourthly, as to the bracketing paradoxes of the type *baroque flautist*, I think that the NSRs are the key for the acceptability of the expressions. In *baroque flautist*, *baroque* does not relate to the head's referential feature PERSON, but relates to one of its non-referential feature to mean a special kind of flute. Note that *baroque flute* should be interpreted as a type of flute, rather than a concrete object. The ungrammaticality of *silver flutist* is ascribed to the fact that *a silver flute* is a syntactic structure meaning a concrete object—as is witnessed by its WSR.

Therefore, I think that the general ban on syntactic elements to occur inside morphological construct can explain its ungrammaticality.

Fifthly, as to the semantic shift which causes RAdj to become QAdjs, we see it as a natural shift for a particular type of adjectives to become unmarked adjectives. Note that English has only a handful of QAdjs of native origin and very impoverished nature of adjective-forming derivation. Therefore, this semantic shift can be seen as a means to increase its reservoir of QAdjs.

Chapter 4
Collateral Adjectives and Lexicography

4.1. Introduction

This chapter deals with how CAs are—and should be—treated in lexicography. As we have seen in Chapter 2, CAs are defined as Latinate suppletive RAdjs, which have the following two properties:

(A) Formal unconnectability of CAs to their BNs:
They cannot be related to their BNs in terms of the form, which leads to the use of the term 'suppletion', as we have seen in Chapter 2; and

(B) Constant semantic relations between CAs and their BNs:
They all have shared common grammatical and semantic properties with their BNs as we have seen in Chapter 3, which enables us to refer to them as RAdjs.

From the above properties derive the following three questions which have implications on lexicography. The first question is how dictionaries should treat morphological derivatives. As we have seen in previous chapters, the grammatical and semantic relationship between RAdjs and their BNs is always constant, which enables us to conclude that there are certain derivational relations held between CAs and their BNs; then, it is reasonable to assume that CAs should be treated just as the same way as other non-suppletive morphological derivatives.

In considering this possibility, one thing we should bear in mind is that lexicography is different from pure theoretical linguistics. For example, though under the Lexicalist Hypothesis which started with the monumental work of Chomsky (1970), many nominalised forms are treated as derivationally unconnected to their alleged underlying base

forms, they are still semantically related to them, which is worth describing from the lexicographical point of view.[129]

Secondly, there is a question about how we should cope with the alphabetisation principle which is absolutely dominant in lexicography. As is pointed out by Jackson (2002: 145), there is synonymy between 'dictionary order' and 'alphabetical order'. However, apart from cross-referencing between headwords, CAs can by no means be related to BNs in any dictionary obeying the alphabetisation principle.

We must note, however, that if CAs and their BNs are suppletive, they are no different from many other non-suppletive derivatives and if non-suppletive derivatives are treated microstructurally as run-ons or sublemmata, then, there is no reason not to extend such a microstructural treatment to CAs.

Besides that, if as Leisi (1974: 41) points out,[130] the knowledge of classical languages in English is far more important than in any other language, then, such a treatment would be welcomed in lexicography.

The third question raised by the above two properties is how we should treat CAs. Should they be treated as sublemmata, run-ons, or something else? Should we treat them simply as lemmata with one of the definitions (i.e. that of RAdj's) cross-referenced to its corresponding BN? Actually, in order to answer this question, it is necessary to balance theoretical aspects against practical aspects in lexicography. For example, in semasiological alphabetical dictionaries, the importance of

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[129] A simple demonstration of this is that in many dictionaries, we see many nominalised forms listed as lemmata having their definitions in 'the act/condition/state/process of X' (X is an underlying verb).

[130] The following is a citation from Leisi (1974: 61):

> So ist denn die Beschäftigung mit den klassischen Sprachen, die einstmals die Ursache der englischen Latinismen war, heute eine Folge derselben, d. h. eine Notwendigkeit für denjenigen, der die Wortfamilien der eigenen Sprache in ihrer Ganzheit besitzen und durchschauen will, kurz, sie hat für die muttersprachliche Bildung im englischen Bereich eine ungleich wichtigere Bedeutung als etwa im deutschen.

simple and straightforward access structures overrides that of linguistically important semantic relations between words. Thus, it is normally the case that only transparent derivatives resulting from suffixation are listed in the microstructure of their BNs—as is witnessed by the observation that **fatherless**, **fatherlike**, **fatherly**, **fatherhood** are often treated at **father**, whereas **forefather**, **godfather**, **grandfather**, **stepfather**, **paternal**, among others are not. Although this problem has been considered before, we would like to consider this problem in this chapter once again.

The structure of this chapter is as follows: First, in 4.2, we shall see how morphological derivatives are treated in dictionaries in general. In 4.3, we shall consider the distinction between semasiological and onomasiological dictionaries with special reference to CAs. In 4.4, we shall conduct surveys on actual dictionaries, both past and present. Considerations are given in 4.5. Finally, in 4.6, we shall summarise the discussions in this chapter.

Before embarking on discussions, terminological clarification is in order. As is pointed out by Urdang in McArthur, ed. (1992: 375), among others, the term 'entry' is notoriously ambiguous. In order to avoid unnecessary confusion, we would like to base our terminology mainly on Hartmann and James's (1998) terminology, according to which the terms **entry**, **headword**, and **lemma** are defined respectively as follows:

> **entry**: 'The basic REFERENCE UNIT in a dictionary or other reference system such as a library catalogue. A wide range of formats (MICROSTRUCTURE) is possible. In the DICTIONARY, depending on its content and purpose, these component parts are common: the LEMMA (which allows the compiler to locate and the user to find the entry within the overall word-list); and the formal COMMENT on the 'topic' introduced by the lemma (spelling, pronunciation,

grammar); and the semantic 'comment' (definition, usage, etymology).' (50)

headword: 'The form of a word or phrase which is chosen for the LEMMA, the position in the dictionary structure where the ENTRY starts.' (67)

lemma: 'The position at which an entry can be located and found in the structure of a REFERENCE WORK.' (83)

The relationship between the terms macrostructure [131] and microstructure[132] is illustrated as below:

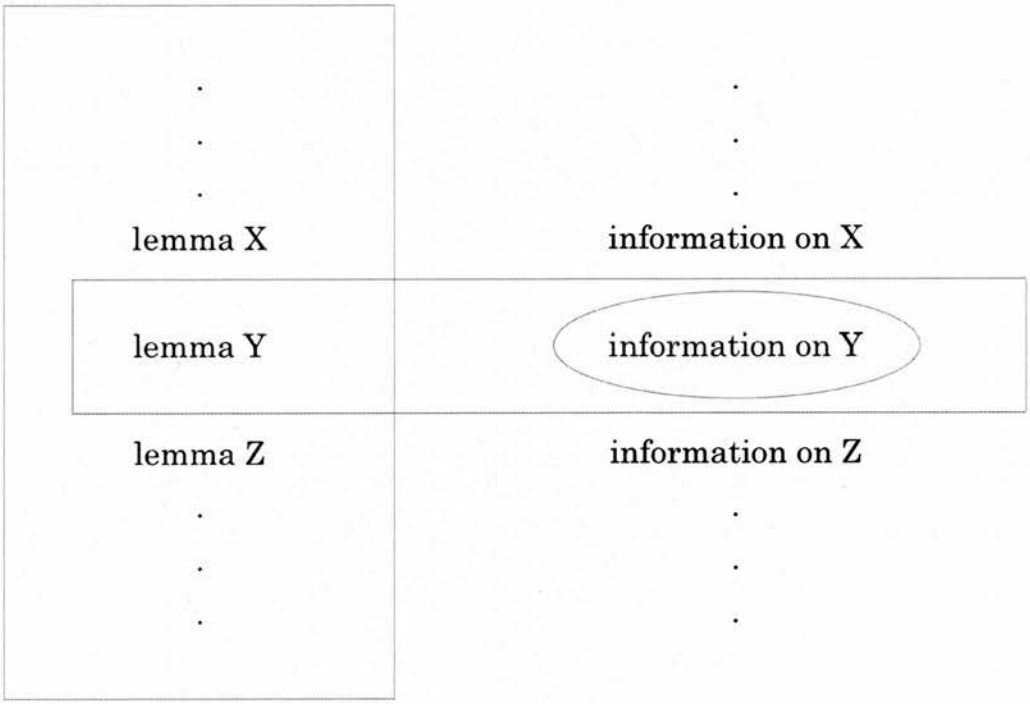

Fig. 1 Simplified visualisation of macrostructure and microstructure of the dictionary

(= macrostructure, = article, = microstructure)

(Hausmann and Wiegand, 1989: 329)

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[131] The term *macrostructure* is defined as '[t]he overall LIST structure which allows the compiler and the user to locate information in a REFERENCE WORK'. (Hartmann and James, 1998: 91)

[132] The term *microstructure* is defined as '[t]he internal design of a REFERENCE UNIT'. (Hartmann and James, 1998: 94)

However, since every dictionary has its own idiosyncratic aspects illustrated by, for example, adoption of colour fonts, type settings, etc., a certain amount of 'parochial' terms is unavoidable which are defined on the basis of individual dictionaries.

4.2. Morphology in the Dictionary

4.2.1. Lexicographical Treatment of Inflectional Word Forms and Derivatives

Although theoretically the boundary between inflection and derivation is difficult to draw, lexicographical convention has long treated them differently. This is reasonable if one considers that the whole meanings of one lexeme are retained in different word forms—i.e. inflectional variants. Thus, in the past form of *go*, *went*, although it cannot be related to the base (infinitival) form, the whole meanings of *go* never change irrespective of its different word forms.

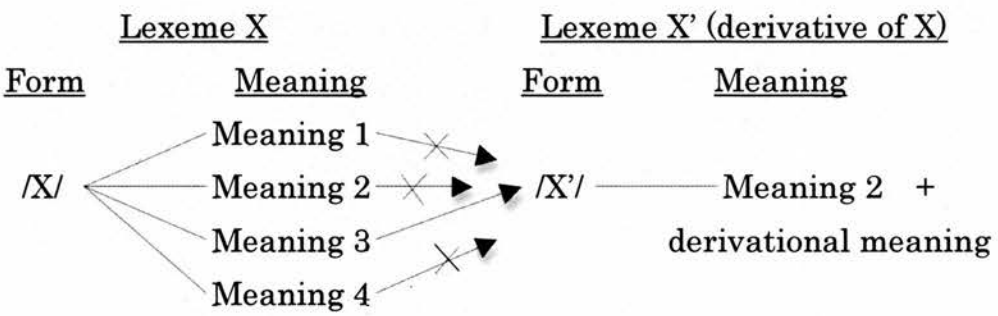
The above fact reflects the conventional lexicographical treatment of inflectional word forms as 'inflectional variants' typically placed immediately after the headword and its pronunciation. In the case of irregular word forms such as *went*, *gone* (~ *go*); *am*, *are*, *is*, *was*, *were*, *being*, *been* (~ *be*); *better*, *best* (~ *good*); among others, they also have their irregular word forms as headwords with their comments only of the form '... form of X' (e.g. **went** 'the past form of **go**').

The situation, however, is quite different in the case of derivational morphology, where not all meanings of the underlying base forms are inherited in derivatives. When we hear a certain word ending in suffix *-ly*, for example, we are prone to think that the meaning expressed by *-ly* can be added to the whole range of meanings of the base form to which this suffix is attached. However, this is not the case, obviously, as is clearly shown by the simple fact that the adverb *fitly* does not have the

meaning 'healthily'. Although the adjective *fit* has the meaning 'healthy', *fitly* is used to mean 'properly, appropriately' only. One might argue that the above-mentioned fact does not deny the possibility that a certain morphological derivation is extended to apply to other meanings of the base word. Thus, the word *waiter* has a possibility to be interpreted as 'a person who waits', as well as 'a person who waits on patrons in a restaurant', just as Pilch (1985: 419) observes. In my opinion, however, this is more of a problem of 'derivational' vs. 'conventional component' in Corbin's (1987, 1989: 46-47) terminology, rather than a problem of synchronic polysemy, as Pilch suggests.[133]

Indeed, as we have seen in 2.2.2, 2.2.3, and 2.3.2, this fact poses a serious problem in the theory of morphology as well as lexicography. We are prone to think that morphology is 'the study of the combination of morphemes to yield words' (Haspelmath, 2002: 3); however, morphological derivatives are dependent not only on the forms but also on the semantic contents of words; and hence, if we assume lexical polysemy, the assumed derivation rule (i.e. *-ly* suffixation, in the case of *fitly*), has to apply particular meaning(s) of the base word and should not apply to the base word (i.e. *fit*) holistically. This situation can be illustrated as follows:

(4.1)



In (4.1), it is shown that only meaning 3 of all the meanings of lexeme X is inherited to its morphological derivative X'. Note that meanings 1, 2,

[133] In Corbin's framework of morphology, a 'selector' (*sélectionneur*) weeds out well-formed forms which are actually not used in her conventional component. It seems to me that waiter meaning 'a person who waits' is weeded out in this component, although it is derived in her derivational component by the application of a word formation rule.

and 4 are not inherited to the meaning of X'. This means that if we treat derivatives as run-ons, we have to be careful to treat them under the appropriate meanings of the base words.

Alternatively, if we assume lexemes to be monosemous, then, we can express the relevant derivational relationship more clearly.[134] Actually, such a tack is taken in two Cantabrigian students' dictionaries—CIDE and CALD,[135] in which lemmata are fundamentally assumed to be monosemous. In these dictionaries, if lemmata are homophonous, they carry GUIDE WORDS for users to find right word correctly. Thus, CIDE has **fit** CORRECT SIZE *v*, **fit** SUIT *v*, **fit** POSITION *v*, **fit** HEALTHY *adj*, **fit** ILLNESS *n*, and **fit** SHORT FEELING *n*; and the derivatives are described in the microstructures of their appropriate lemma. The adjective **fit** meaning 'suited, adapted, or acceptable for a given circumstance or purpose' is treated as a subheadword in the microstructure of the verb **fit** SUIT; and there are two subheadwords which have the same form **fitness**—one in the microstructure of the verb **fit** SUIT, and the other in the microstructure of the adjective **fit** HEALTHY.

The above discussion shows that there is 'copious room for interpretation' (de Caluwe and Taeldeman, 2002: 115) of the lexicographical treatment of morphological derivatives.

4.2.2. The Lexicographical Status of Derivatives

The basic principle of the lexicographical treatment of the lexeme is that if a given lexeme is a nondecomposable Saussurean sign, it has the main-entry status in the dictionary. Therefore, if there is any irregularity in the formation of a derivative, it has to be listed—i.e. treated as something which has the main-entry status. This is reminiscent of Di Sciullo and Williams' (1987) notion of *listeme*, which

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[134] However, in allegedly monosemous dictionaries like CIDE, there is always a problem of ensuring monosemy in lemmata. See Akasu, et al. (1996) for the criticism of the principle of monosemy adopted in CIDE.

[135] The word *Cantabrigian* is a CA, whose BN is *Cambridge (University)*. Note that CALD is the second edition of CIDE, renamed.

can be defined as the linguistic object which does not have the form or the meaning 'specified by the recursive definitions of the objects of the language' (Di Sciullo and Williams, 1987: 3) and therefore has to be memorised by the speakers and listed in the lexicon.

However, as we have discussed in 4.2.1, derivatives have different lexicographical interpretations irrespective of the above principle. Especially noteworthy is the treatment of lexemes with 'high-productivity' affixes such as *-al*, *-ly* and *-ness*. Though the basic principle is still operative on obviously opaque derivatives such as *business*, *hardly*, etc., many dictionaries treat such transparent derivatives as *coalitional*, *coalitionally*; *coastal*, *coastally*; etc. either as run-ons or subheadwords of the base forms. Hence, *coalitional* and *coalitionally*, and *coastal* and *coastally* are often listed in the microstructures of **coalition** and **coast**, respectively.

Though a unified approach for the option of separate entries or headword inclusion is hard to come by, the following can be thought of as positive factors to treat derivatives microstructurally—i.e. as run-ons or subheadwords:

(A) The derivative in question is a high frequency item,

(B) The morphological process involved is simple in nature so that high degree of morphosemantic transparency (in terms of Natural Morphology, for example) can be recognised. This indeed makes the derivatives in such consonant-initial native suffixes as *-less*, *-ness*, more plausible candidates to be treated in the microstructures of their base words than those ending in vowel-initial Latinate suffixes as *-al*, *-ion*, etc.

(C) There is always a demand for space saving, which is one of the

inevitable constraints of dictionary making.[136]

On the other hand, we see many dictionaries treating compounds and multi-word lexemes such as phrasal verbs as having separate, independent entries. In many cases, the above-mentioned basic principle influences such a lexicographic policy so that those with higher degree of morphosemantic opaqueness have separate-entry statuses. However, sometimes, there may be a commercial factor involved in adopting such a policy—i.e. to make the dictionary look as if it contained larger number of entries than it actually does.

4.2.3. The Alphabetisation Principle and the Problem of Nesting

As we have seen in 4.1, the alphabetisation principle predominantly prevails in lexicography—so much so that ' '[d]ictionary order' is synonymous with 'alphabetical order'. (Jackson, 2002: 145). The adoption of this principle enables the access structure of the dictionary to be easy and straightforward. A simple proof of the effectiveness of this principle is that even such onomasiological dictionaries as thesauri almost always have another additional alphabetical wordlist (often in the form of the alphabetical index) in order to solve various 'word-finding' problems in their access structures.[137]

However, although the alphabetisation principle is overwhelmingly predominant in lexicographical convention, it is not free from flaws. There are mainly two sources of problems pointed out in the literature. Firstly, the adoption of the alphabetisation principle sometimes makes significant lexical relations—which are semantic and/or morphological–invisible. Often pointed out are the cases where prefixation is involved. Note that each member in such pairs as *happy* ~ *unhappy*, *tie* ~ *untie*, *war* ~ *pre-war*, among others, is kept mutually

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[136] Kajima (1976: 21) is among the first who mentioned the importance of the space and the weight of dictionaries.

[137] *Access structures* are 'those component parts of the overall design of a REFERENCE WORK which allow the user to search for a particular item of information'. (Hartmann and James, 1998: 3)

apart as main entries in the dictionaries adopting the alphabetisation principle. Not only words resulting from prefixation, but also compounds and their head words are kept unrelated—witness that, for example, such examples as *chairperson*, *businessperson*, *salesperson*, *spokesperson*, etc. are placed separately from their head word *person*. Even more extremely, there are cases in which derivatives and their underlying base forms cannot be related in terms of the form. CAs such as *paternal* (~ *father*), *vernal* (~ *spring*), *ecclesiastical* (~ *church*) are precisely the case in point. The following citation from Levi (1978) well depicts such problematic situations:

> Worse yet, nouns that have no morphologically related adjectives but rather suppletive adjectival equivalents (as in *heart/cardiac*, *spring/vernal*, *bird/avian*, *city/urban*, and many more) may be separated from their nominal adjectives by hundreds of pages. What is frustrating about this policy (or rather, nonpolicy) is that there is simply no direct way of finding out from these dictionaries what the adjectival substitute for a noun is, or even whether such an equivalent exists. This must certainly be annoying to a non-native speaker, but similar frustration awaits even the native speaker who wishes to know, for example, whether there **is** a nominal adjective available that might replace a given noun, if only in technical language. Thus, I happen to know that *buccal* may replace *cheek*, and I accidentally discovered that *lacustrine* exists as an adjectival equivalent of *lake*, but I simply have no direct way of ascertaining from my dictionary whether nominal adjectives exist to replace such nouns as *chicken*, *harbor*, or *grass*.
>
> Levi (1978: 234)

Secondly, though similar to the first problem, but more fundamentally, the adoption of the alphabetisation principle in dictionaries presents only 'an atomistic view of the vocabulary, treating each word in isolation, the headword with its entry, and making few of the connections that exist

between words.' (Jackson, 2002: 146) Lexical semantic relations are indeed very difficult to capture in alphabetical semasiological dictionaries. As is pointed out by Kojima (1999: 233), Jackson and Zé Amvela (2007: 106ff.), Lipka (2002: 152-153), among others, there are paradigmatic meaning relations such as hyponymy (*plant ~ tree*), meronymy (*plant ~ leaf*), synonymy (*pail ~ bucket*), antonymy (*asleep ~ awake*),[138] to mention a few, as well as syntagmatic meaning relations described in terms of collocations defined in terms of the mutual expectancy of words. These meaning relations, however, are totally kept unrelated in alphabetical semasiological dictionaries.

If we look back in the history of lexicography, the alphabetisation principle was incomplete when it was first introduced in English lexicography. Hüllen (1989: 103-104) and Osselton (1989: 165) point out that in the medieval period, primitive forms of dictionaries, or glossaries, simply list words in 'AB order', which means that headwords are ordered according to the first two letters. According to Osselton's (1989: 166) survey based on a random sampling on ten pages (218 entries) in the first monolingual English dictionary, Cawdrey's *A Table Alphabeticall* (1604), 26 words are found placed out of the alphabetical order. Interestingly, when derivatives are listed in this dictionary, underlying base forms come first, followed by derivatives—witness **assigne** < **assignation**, **captiue** < **captiuate**, etc. Osselton gives examples of other types of deviance—random deviance, printer's preferential forms, and bracketed morphological and orthographical variants—but it is clearly shown that in this first dictionary of English, more importance is given to the microstructural content—i.e. the headword-definition pairs—than to the macrostructural arrangement—i.e. its access structure.

What seems interesting is the fact that the treatment of derivations has

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[138] Family terms such as *father, mother, sister, brother, uncle, aunt, cousin, parent, nephew, niece*, among others are a case in point. Though they are all conceptually perfectly well structured, they are left unconnected in alphabetical semasiological dictionaries. Interestingly, in order to compensate for this flaw, many student's dictionaries resort to the introduction of box articles or middle matters to present a bird's-eye view of such terms.

been more or less the same all through the history of English lexicography. Even today, we see many derivatives listed as run-ons or subheadwords in the microstructures of the entry of the underlying base form and this violates the alphabetisation principle. However, just as de Caluwe and Taeldeman (2003: 115ff.) point out, recent development of lexicography enables us to consider the following factors in editing a dictionary:

(a) Semantic nature of the derivative (any irregularity in meaning and/or form leads to the independent-entry treatment);

(b) Frequency of occurrence of the derivative (high-frequency words are often treated as independent entries);

(c) Level of users (e.g., For 'beginner-level' dictionaries, it is better to treat derivatives as independent entries.); and

(d) Practical editorial constraint (e.g., space limitations, 'paper-based or electronic?' etc.)

4.3. Collateral Adjectives and Dictionaries

4.3.1. Semasiological and Onomasiological Dictionaries

In the Continental European tradition, two different approaches have long been acknowledged in the study of semantics: i.e. semasiology and onomasiology. The former, semasiology is '[a]n approach in SEMANTICS concerned with the explanation of the meaning of given words or phrases' (Hartmann and James, 1998: 124), whereas the latter, onomasiology is '[a]n approach in SEMANTICS which is concerned with the matching of the most appropriate word or phrase to a given CONCEPT.' (Hartmann and James, 1998: 102) This means that either one can be regarded as a complementary approach to the other in European linguistics. Semantics in the American tradition, in contrast, is predominantly semasiology-oriented, i.e. one-way from the form to the content. The

term 'semasiology' is normally understood as 'a part of grammar; opposed to phonology; subdivided into study of the sentence, the word, and the lexeme' (Hamp, 1966: 54). Note that this glossary (Hamp, 1966) does not even have 'onomasiology' as an entry.

In lexicography, this distinction reflects the distinction between semasiological and onomasiological dictionaries. As to semasiological dictionaries, starting point is the form and they explain the meanings of a given lexeme. Since the alphabetisation principle is predominantly adopted in lexicography, when the word 'dictionary' is used, its referent is a semasiological one by default. Onomasiological dictionaries, on the other hand, are characterised by their direction from concept to form. They explain how a particular meaning is realised in terms of the form. According to Hartmann and James (1998: 102), the thesaurus, the synonym dictionary, and the word-finding dictionary [139] are typical examples of onomasiological dictionaries. Svensén's (1993; 233-234) classification of onomasiological dictionary is four-fold: (A) synonym dictionaries, (B) antonym dictionaries, (C) thesauri, and (D) pictorial dictionaries.

Though the dictionary user has long been the 'familiar stranger' (*der bekannte Unbekannte*, ['the known unknown'] Wiegand, 1977: 59) and still eludes strict theorisation, we can safely conclude that dictionary users look up a dictionary mainly for the meaning(s) of a particular linguistic form. This is supported by Barnhart (1962), Quirk (1973), Tomaszczyk (1979), Béjoint (2000:140ff.), Jackson (2002: 74ff.), among others. Semasiological dictionaries primarily serve this function and thus, when we speak of dictionaries, they are almost all the time what comes to mind.

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[139] According to Hartmann and James (1998: 156), the *word-finding dictionary* is defined as follows:

> A type of REFERENCE WORK which supplies words for meanings. This is done by inverting the traditional order which explains the meanings of relatively unknown words by easy words (SEMASIOLOGY), providing instead access to the more unusual words via easy ones.

Both semasiological dictionaries and onomasiological dictionaries have their advantages and disadvantages. As to semasiological dictionaries, lemmata are easy to locate because their access structure is based on the alphabetical order. This is surely one of their advantages. Semasiological dictionaries, however, easily lose track of various meaning relations words enter into. In 4.2.3, we have already seen that this surely is a major drawback of semasiological dictionaries.

In the case of onomasiological dictionaries, words having related meanings can be presented together, which enables users to coax back into consciousness the words which they have only on the tip of their tongue. This is surely one of their greatest advantages because semasiological dictionaries lack such a property. In addition, onomasiological dictionaries can stimulate users' humanistic interests in connecting various words semantically because they present words not as single, self-contained units but as something which should be understood in relation to other words. Therefore, they necessitate users to develop various lexical-semantic networks. As Kojima (1999:233) observes, however, it sometimes happens that users have to read the entire relevant dictionary article before they finally get access to the word they want.

Besides the above-mentioned point, there are three main disadvantages with onomasiological dictionaries. Firstly, since meaning-based classification is notoriously subject to criticism for being arbitrary in nature, the access structure of onomasiological dictionaries can never be perfectly objective. Take the adjective *beautiful*, for example. We can never be sure whether 'beautifulness' belongs to the category Affections or Form in the categories of Roget's thesaurus. One should note that lemmata should be understood as concepts rather than actual words, which also leads to indeterminacies or overlaps of descriptions. This is because they are not meanings themselves but are at best indications of

meanings. Secondly, lexical-semantic relations involve so many factors that they easily elude any attempt to make exhaustive descriptive coverage. As is pointed out by Kojima (1999: 233), Jackson and Zé Amvela (2007: 106ff.), Lipka (2002: 152-153), among others, there are paradigmatic meaning relations such as hyponymy (*plant ~ tree*), meronymy (*plant ~ leaf*), synonymy (*pail ~ bucket*), antonymy (*asleep ~ awake*), to mention a few, as well as syntagmatic meaning relations described in terms of collocations defined in terms of the mutual expectancy of words. To cover all of them in an onomasiological dictionary is completely unrealistic. Thirdly, the arbitrary nature of semantic classification causes serious word-finding problems in onomasiological dictionaries. In order to alleviate this, onomasiological dictionaries tend have another separate alphabetical access structure typically placed after the main body of the dictionary; or alternatively, the alphabetical principle is introduced in their main access structure to become 'alphabetical thesauri' at the expense of their pure onomasiological characteristics.

The above discussions have shown that semasiological and onomasiological dictionaries have complementary characteristics. However, we should bear in mind that there is a possibility for each of the two categories to benefit from the other by introducing some of its aspects. In what follows, I would like to pursue such a possibility with special reference to CAs.

4.3.2. How Should We Overcome the Demerits in Treating Collateral Adjectives?

As to the semasiological dictionary camp, it is necessary to take in onomasiological aspects in treating CAs. One of the ways to achieve this is to list all the relevant CAs in the microstructure of their appropriate BNs. This can be done with or without the tag such as [Collateral Adjective] or [Foreign Adjective] preceding the CAs, but what kind of tag should be used is determined by the level of dictionary users. Since, as

Leisi (1974: 61) points out, the knowledge of etymology—certain knowledge of classical languages—is crucial in establishing good command of English, it would be of great help for users from intermediate level onwards to be given information about the etymological nature of those adjectives. In such a case, 'collaterality' or at least 'foreignness' should be visibly shown in the tag. Alternatively, the possibility to introduce such tags as [Related Adjective], or simply, [Adjective] without showing the etymological origin of the adjective in question should be likewise considered.

In the case of onomasiological dictionaries, one of the solutions is definitely to enhance their access structure by introducing the alphabetisation principle either in the ordering of the macrostructure or by introducing another alphabetical wordlist—i.e. the alphabetical index. This is indeed the tack taken by some of the dictionaries, as we shall see in 4.5. Also important is the introducing of such information categories as grammar, etymology, and usage.

Actually, what the above discussions mean is that semasiological dictionaries should be 'onomasiologised' and onomasiological dictionaries should be 'semasiologised'. I think that some point of convergence should eventually be sought in the treatment of CAs in lexicography. I shall return to this topic in 4.5.

4.3.3. Dictionaries and Their Treatments of Collateral Adjectives

In this subsection, I would like to make a survey on the dictionaries which have provided special treatment for CAs. The phrase 'special treatment' is used several times to exclude 'ordinary treatment' of CAs as independent main entries without referring to their BNs. My own survey reveals that there are only a handful of dictionaries, both present and past, which provide special treatment for CAs. In what follows, I shall classify them according to the direction of lexicographical descriptions—i.e. whether a given dictionary is a semasiological

dictionary or an onomasiological one.

4.3.3.1. Semasiological Dictionaries Providing Special Treatment for Collateral Adjectives

The special treatment of CAs in the microstructure of a dictionary was first introduced in lexicography when a series of Funk and Wagnalls' (FW's) dictionaries was published. My speculation is that their editing policy was strongly influenced by one of the editors who was the terminological inventor of the CA, Thomas Pyles himself. In 4.5, a lexicographical survey is conducted on one of FW's dictionaries, SCD.[140] In THE PLAN OF THE DICTIONARY, the following description can be found:

> Because of extensive borrowing in English from Norman French and Medieval Latin, we find a good many English nouns which have adjectives closely connected with them in meaning, but not in form, such as *arm* and *brachial*, *horse* and *equine*, *neck* and *cervical*, *winter* and *hibernal*, *day* and *diurnal*, etc. These functionally related adjectives are defined in this dictionary in their alphabetic place, but as an added convenience many of them are also shown with their associated nouns. Collateral Adjectives follow the sense or senses of the noun to which they apply, and are introduced with a diamond symbol ...
>
> (SCD: xxi)

Indeed, FW's dictionaries were the first to explicitly make mention of the term CA in lexicography. However, this lexicographical treatment of CAs was not inherited by other dictionaries in the lexicographical tradition of America.

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[140] SCD is classified as a college (or collegiate) dictionary which 'provides information for upper-secondary school and undergraduate students'. (Hartmann, 2002: 270). According to Béjoint (2000: 44), the college dictionary normally has anywhere between 125,000 and 200,000 words and can be regarded as 'slightly bigger 'desk' dictionary.' (ibid.)

Britain, on the other hand, has a long tradition of providing a special treatment for CAs. POD up to the sixth edition listed not only CAs but also other words which are paradigmatically related to the headword. See the following microstructure of the lemma **dog**, in which not only its CA (*canine*), but also other words (i.e. *bitch*, *puppy*, *whelp*, *litter*, *bay*, *bark*, etc.) are listed:

> **dŏg.** 1. n. Quadruped of various breeds allied to wolf & fox, noted for serviceableness to man in hunting, shepherding, guarding, & companionship, & for antipathy to cats (female, *bitch*; young, *puppy*, *whelp*; set of puppies, *litter*; sounds, *bay*, *bark*, *howl*, *whine*, *yelp*, *yap*, *snarl*, *growl*; bear young, *whelp*, *pup*, *litter*; cf. *kennel*, *bow-wow*; adj. *canine*; ...)
>
> (POD4: 239-240)

To the great disappointment and inconvenience of users, however, POD stops listing these words from its sixth edition onwards. Thus, users are not informed about such paradigmatic lexical relations any longer. See Kajima (1976: 62), Nakao (2003: 93-107), for example, for the criticism of POD from sixth edition onwards. Both of them see this as its great drawback.

Also in Britain, CED8 provides special treatment of CAs in their BNs' microstructures. Since its first edition, CED has consistently listed CAs in their BNs' microstructures. Until its seventh edition, Laurence Urdang, who edited MOD, which we shall see in 4.4.6, was one of the editors. In its **Guide to the Use of the Dictionary**, the following explanation can be found:

> Certain nouns, especially of Germanic origin, have related adjectives that are derived from Latin or French. For example, **mural** (from Latin) is an adjective related in meaning to **wall**. Such adjectives are shown in a number of cases after the sense (or part-of-speech

block) to which they are related.

> **wall** (wɔ:l) *n* **1 a** a vertical construction made of stone, brick, wood, etc [...] Related adj: **mural** [...]
> (CED8: xi)[141]

Though above three dictionaries are monolingual dictionaries, there are three bilingual, English-Japanese dictionaries, which treat CAs in their microstructures—Readers2, Chu-Eiwa7, and GEN3. Firstly, Readers2 is an upper-level English-Japanese dictionary. Since its target users are upper-level general readers of English, it gives special importance to the selection of lemmata. Note that it contains encyclopaedic information as well as linguistic information.

In Readers2, CAs are listed either immediately after the relevant definition of the BNs in double parentheses (e.g. ((cf. AQUEOUS **a** [i.e. adjective])) in the definition **2 a** of **water**), or listed after the star symbol (e.g. '★ "dog for hunting" *hound*; "wild dog" *cur*; "child dog" *puppy*; ... its adjective is *canine* [translation mine]' at the end of the definition **1 a** of **dog**). The latter is reminiscent of POD's method up to its sixth edition in that CAs are listed together with other words semantically related to the lemma.

Chu-Eiwa7 and GEN3 belong to the category of the pedagogical dictionary 'designed for the practical reference needs and skills of (language) learners' (Hartmann, 2001: 177). Their users are expected to be intermediate learners onwards. Expected target users in Japan are upper-level high-school students onwards. In both dictionaries, CAs are listed with the tag [Foreign Adjective].

4.3.3.2. Onomasiological Dictionaries Treating Collateral Adjectives

[141] The typeset used in CED8 is CollinsFedra, a special version of the Fedra family of types designed by Peter Bil'ak. In CED8, its sans serif version is used for headwords and serif version is used for entries.

Onomasiological dictionaries which treat CAs can be largely classified into two types: (A) alphabetical thesauri, and (B) 'word-finding dictionaries' (Hartmann and James, 1998: 156).

OTE2 belongs to the former category. Lexicographically, one of OTE2's characteristics is that it has rich information categories. This marks a sharp contrast with non-alphabetical thesauri, most of which spend large space on additional access structures and have only enumeration of words in their microstructures.

OTE2 lists CAs in the microstructure of their BNs, under the heading of WORD LINKS. As to the WORD LINKS, OTE2 says that they 'supply words which are not actual synonyms but which have a different kind of relation to the headword.' (x) CAs can be accommodated here because although they are not synonyms with the headword, being RAdjs, they all have the same transparent semantic relations (i.e. 'relating to ...') to their BNs.

ORD1 and MOD, on the other hand, belong to the category of the word-finding dictionary.

According to its Introduction, ORD1 is designed to help users to 'coax back into consciousness' the words we all have 'on the tip of our tongue'. (Introduction, unpaged) The lemmata alphabetically ordered in ORD1 are metalinguistic 'key concepts', rather than actual words.

ORD1 observes that it lists 'adjectives related to the article headword in meaning but not in appearance (for example, *dental* at **tooth**), or whose formation may present other difficulties if imperfectly remembered'. (Introduction, unpaged) This means that the adjectives listed in this dictionary ('ORD1-As', for short) include non-CAs as well.

MOD, in contrast, is a list of those adjectives which are not 'created by the

addition of a suffix' and which undergo 'a somewhat more drastic change in the base word'. (vii) Note that this description is something very close to notion of 'suppletive' forms which we have seen in Chapter 2. This dictionary is special in the sense that it is edited exclusively to list CAs under their BNs. Its editor is a well-known lexicographer, Laurence Urdang, who has edited many dictionaries, including *The Random House Dictionary of the English Language* (Random House, 1966) and *The Oxford Thesaurus* (Oxford University Press, 1995).

Structurally, MOD is peculiar in that its index functions as a semasiological wordlist. This repeats all of the CAs in alphabetical order, with their BNs associated with each of them. Note that 99 pages of this book are devoted to the index, which makes this semasiological wordlist almost the same size as the main body onomasiological wordlist, which is 107 pages long.

The above discussions have clearly shown that not so many dictionaries have ever paid special attention in dealing with CAs in their lexicographical descriptions. Note that in the monolingual, semasiological dictionary camp, CED is the only dictionary that is currently available providing special treatment for CAs

4.4. Lexicographical Surveys of the Treatment of Collateral Adjectives

In this section, a lexicographical survey of the treatment of CAs in actual dictionaries is presented. The dictionaries surveyed are SCD, Readers2 (cross-surveyed with ORD1), CED, and GEN3 from the semasiological camp, and ORD1 and OTE2 from the onomasiological camp.

4.4.1. *Standard College Dictionary* (SCD)

By my own count, there are 144 lemmata in SCD having CAs listed in their microstructures. See Table 4.1 for the treatment of CAs in SCD. Three lemmata under A contain CAs—*eleemosynary* at **alms**, *stibial* at **antimony**, and *brachial* at **arm** (definition **1**) and twelve lemmata under B

contain CAs—*dorsal* at **back** (definition **1**), *tonsorial* at **barber**, *balneal* at **bath** (definition **1**), *ursine* at **bear²** (definition **1**), *baccate* at **berry** (definition **1**), *avian* at **bird** (definition **1**), *vesical* at **bladder** (definition **1**), *hemal* at **blood** (definition **1**), *osseous* and *osteal* at **bone** (definition 1), *taurine* at **bull** (definition **1**), *fascicular* at **bundle** (definition **4**), and *gluteal* at **buttock** (definition **1**). In spite of its announcement that SCD contains CAs, its coverage remains rather narrow in comparison with the other dictionaries treated in this section. Besides, it is unfortunate that those treated in SCD include such 'hard word' adjectives as *eleemosynary* at **alms**, *pulicene* at **flea** (definition **1**), *quercine* at **oak** (definition **1**), and *zibeline* at **sable** (definition **1**).

Table 4.1 The Treatment of CAs in SCD

Headwords, which are BNs, under which CAs are treated	CAs	Notes	Semantic classification
alms	eleemosynary		
antimony	stibial		Nature (mineral)
arm (1)	brachial		Human body
arrow (1)	sagittal		
back (1)	dorsal		
barber	tonsorial		Occupation
bath (1)	balneal		
bear² (1)	ursine		Nature (animal)
berry (1)	baccate		Nature (plant)
bird (1)	avian		Nature (animal)
bladder (1)	vesical		Human body
blood (1)	hemal		Human body

bone (1)	osseous, osteal		Human body
bull (1)	taurine		Nature (animal)
bundle (4) *Bot.*	fascicular		Nature (plant)
buttock (1)	gluteal		Human body
cave (1)	spelean		Nature (topography)
cheek (1)	buccal, jugal		Human body
chest (1)	pectoral		Human body
crow[1] (1)	corvine		Nature (animal)
dawn (1)	auroral		Nature
death (12)	lethal, mortal	The definition under which the CAs are listed is not appropriate.	Nature
deer (1)	cervine		Nature (animal)
dog (1)	canine		Nature (animal)
eagle (1)	aquiline		Nature (animal)
ear (1)	aural		Human body
earthquake	seismic		Nature
evening (1)	vesperal		Nature
eyelash	ciliary		Human body
eyelid	palpebral		Human body

fever (3)	febrile	The definition under which the CA is listed is not appropriate.	Physics
fibula (1)	peroneal		Human body
field (1)	campestral		Nature (topography)
finch	fringilline		Nature (animal)
fish (1)	piscine		Nature (animal)
five (1)	quinary		Number
flea (1)	pulicene		Nature (animal)
flight[1] (1)	volar		
flood (1)	diluvial		Nature
foot (1)	pedal		Human body
forearm[1]	cubital		Human body
forehead (1)	frontal		Human body
fox (1)	vulpine		Nature (animal)
glass (1)	vitreous		
goat (1)	hircine, capric		Nature (animal)
goose (1)	anserine		Nature (animal)

guardian (2)	custodial	Not only **guardian (2)** but also **(1)** should have listed custodial as its CA.	Occupation
gum[2]	gingival		Human body
hair (1)	capillary, pilar		Human body
hand (1)	manual		Human body
hare (1)	leporine		Nature (animal)
hawk[1] **(1)**	accipitrine		Nature (animal)
head (1)	cephalic		Human body
heart (1)	cardiac		Human body
heat (3) *Physics*	thermal		Physics
holiday (1)	ferial		Time
hoof (1)	ungular		Nature (animal)
horse (1)	equine		Nature (animal)
hour (1)	horal		Time
ice (1)	glacial		Nature
instep (1) *Anat.*	tarsal		Human body
intestine (2)	alvine		Human body
kidney (1) *Anat.*	renal		Human body
king (1)	regal		Occupation
lake (1)	lacustrine		Nature (topography)
land (5) *Law*	praedial		Nature (topography)
leg (1)	crural		Human body

lion (1)	leonine		Nature (animal)
lip (1)	labial		Human body
liver (1) *Anat.*	hepatic		Human body
loin (1)	lumbar		Human body
lung *Anat.* **(1)**	pulmonary		Human body
marriage (1)	hymeneal, marital		Event
meal (2)	prandial		Event
month (4)	mensal	Not only **month (4)**, but also other definitions should list *mensal* as their CAs	Time
morning (2)	matutinal	The definition under which the CA is listed is not appropriate.	Time
mouse (1)	murine		Nature (animal)
mouth (1)	oral		Human body
neck (1)	cervical		Human body
net[1] **(1)**	reticular		Nature
night (1)	nocturnal		Time
nose (1)	nasal, rhinal		Human body
oak (1)	quercine		Nature (plant)

parish (5)	parochial	The definition under which the CA is listed is not appropriate.	Institution
parrot (1)	psittacine		Nature (animal)
peacock	pavonine		Nature (animal)
pig (1)	porcine		Nature (animal)
poppy (1)	papaverous		Nature (plant)
punishment (1)	penal		Institution
purification	lustral		Institution
rain (1)	pluvial		Nature
rib (1) *Anat.*	costal		Human body
river (1)	fluvial		Nature (topography)
sable (1)	zibeline		Nature (animal)
salt (1)	saline		Nature (mineral)
scurvy *Pathol.*	scorbutic		Human body
seal[2] (1)	phocine		Nature (animal)
sewer[1] (1)	cloacal		Institution
sheep (1)	ovine		Nature (animal)
shore[1] (1)	littoral		Nature (topography)
shrew (1)	soricine		Nature (animal)

skin (1)	cutaneous		Human body
slug[2] (1)	limacine		Nature (animal)
snake (1)	ophidian		Nature (animal)
snow (1)	nival		Nature
sole[1] (1)	plantar, volar		Human body
spouse	sponsal		Institution (familial)
spring (6)	vernal		Time
squirrel (1)	sciurine		Nature (animal)
star (2) *Astron.*	astral, sidereal, stellar	The definition under which the CAs are listed is not appropriate.	Nature
stem[1] (2)	cauline		Nature (plant)
stomach (1)	gastric		Human body
sugar (1) *Biochem.* **(a)**	saccharine		Nature
summer[1] (1)	estival		Time
sun (1)	heliacal, solar		Nature
Sunday	dominical		Time
swallow[2] (1)	hirundine		Nature (animal)
swamp	paludal		Nature (topography)
tail[1] (1)	caudal		Nature (animal)

tailor vt. (3)	sartorial	*Tailor* is not a noun but a verb.	Occupation
thigh (1)	femoral		Human body
threshold (3)	liminal	The definition under which the CAs are listed is not appropriate.	
thrush[1]	turdine		Nature (animal)
tongue (1)	lingual		Human body
tooth (1)	dental		Human body
touch (3) *Physiol.*	tactile		Human body
tree (1)	arboreal		Nature (plant)
trust (7) *Law* **(a)**	fiducial		Institution
turpentine (1)	terebinthine		Nature (plant)
twig[1]	viminal		Nature (plant)
twilight (1)	crepuscular		Time
uncle (1)	avuncular		Institution (familial)
underworld (1)	chthonian		Institution
wall (1)	mural		
wall (3)	parietal		Human body
wasp	vespine		Nature (animal)
week (1)	hebdomadal		Time
wife (1)	uxorial		Institution (familial)

wild adj. (1)	feral	Base adjective?	
winter (1)	hibernal, hiemal		Time
wolf (1)	lupine		Nature (animal)
worm (1)	vermicular		Nature (animal)
wrist (1)	carpal		Human body
yolk (2) *Biol.*	vitelline		Nature (animal)

4.4.2. *Genius English-Japanese Dictionary*, Third Edition (GEN3)

GEN3 is an English-Japanese dictionary used primarily by upper-level high-school students. By my own count, there are 67 headwords which are nouns, under which their CAs are listed, headed by the tag [外来形容詞 'Foreign Adjective(s)']. Table 4.2 shows their complete list.

Table 4.2 GEN3's Treatment of CAs

Headwords of BNs under which CAs are listed	CAs
arm (1)	brachial
bird (1)	avian
brain (1)	cerebral
brother (1)	fraternal
cat[1] (1)	feline
chest (1)	pectoral
city (1)	urban
dog (1a)	canine
eagle (1)	aquiline
ear (1)	aural, auditive, audile
earthquake (1)	seismic

elbow (1)	anconeal
end (noun)	final, terminal
eye (1)	optic(al), ocular, ophthalmic
father (1a)	paternal
five (1)	quinary
god (1)	divine
hand (1)	manual
head (1)	cephalic
heart (1)	cardiac
heat (1)	thermal
horse (1)	equine
ice (1)	glacial
island (1)	insular
jaw (1)	genial
kidney (1)	renal
lake[1] (1a)	lacustrine
leg (1)	crural
lens (1)	lenticular
lion (1)	leonine
lip (1)	labial
liver[1] (1)	hepatic
lung (1)	pneumonic, pulmonary
month (noun)	mensal
moon (1)	lunar
morning (1)	matutinal
mother (1)	maternal
mouth (1)	oral
neck (1)	cervical
night (1)	nocturnal
nose (1)	nasal, rhinal
ox (1)	bovine
palm[1] (1)	thenar, volar

pig (1)	porcine
river (1)	fluvial
sea (1)	marine, maritime
shore[1] (1)	littoral
skin (1)	dermal
sole[2] (1)	plantar, volar
son (1)	filial
spring (1a)	vernal
star (1)	astral, sidereal, stellar
stomach (1)	gastric
summer (1)	aestival
sun (1)	solar
ten (1)	decimal
thigh (1)	femoral
thousand (1)	millenary
three (1)	tertiary, triple
throat (1)	guttural, jugular
tongue (1)	lingual
tooth (1)	dental
water (1)	aquatic
wolf (1)	lupine
word (1)	verbal
wrist (1)	carpal
year (1)	annual

4.4.3. *Collins English Dictionary*, Eighth Edition (CED8)

By my own count, there are the eighty-four lemmata in the first 500 pages of CED8 having related adjectives listed in their microstructures. (I will call such adjectives 'CED8-As'.)[142] The following are are CED8-As which appear in the lemmata starting with the letters A and B:

[142] The reason for not using the term CA but adopting the term 'CED8-As' is that these adjectives contain those which are NOT etymologically Latinate—witness *brazen* in (4.2).

(4.2) abbatial (**abbot**); geoponic (**agriculture**); aerial (after sense **2** of **air**), amygdaline, amygdaloid (after sense **3** of **almond**); succinic (after sense **1 b** of **amber**); Angevin (**Anjou**); formic (after sense **1** of **ant**); anal (**anus**); brachial (after sense **1** of **arm**); axillary (after sense **1** of **armpit**); sagittal (after sense **1** of **arrow**); cinereous (after the noun block of **ash**[1]); asinine (after sense **1** of **ass**[1]); auctorial (after sense **1** of **author**); dorsal (after sense **1** of **back**); balneal (after sense **1** of **bath**); littoral (after sense **1** of **beach**); ursine (after the noun block of **bear**[2]); apian (after sense **1** of **bee**); coleopteran (after sense **1** of **beetle**); ventral (after sense **1** of **belly**); bicipital (**biceps**); avian, ornithic (after sense **1** of **bird**); natal (after sense **1** of **birth**); episcopal (after sense of **bishop**); vesical (after sense **1** of **bladder**); haemal, haematic, sanguineous (after sense **1** of **blood**); cyanic (after sense **1** of **blue**); corporeal, physical (after sense **1 a** of **body**); osseous, osteal (after sense **2** of **bone**); Bordelais (after the noun block of **Bordeaux**); cerebral, encephalic (after sense **1** of **brain**); furfuraceous (after sense **2** of **bran**); brazen (after sense **10** of **brass**); mammary (after sense **2** of **breast**); fraternal (after sense **5** of **brother**); boubaline (after the noun block of **buffalo**); taurine (after sense **1** of **bull**[1]); fascicular (after sense **1** of **bundle**); onerous (after sense **2** of **burden**); butyraceous (after sense **1 b** of **butter**); lepidopteran (after sense **1** of **butterfly**); gluteal, natal (after sense **1** of **buttock**)

4.4.4. *The Oxford Reverse Dictionary*, First Edition (ORD1)

ORD1 observes that it lists 'adjectives related to the article headword [i.e. lemmata] in meaning but not in appearance (for example, *dental* at **tooth**), or whose formation may present other difficulties if imperfectly remembered'. (Introduction) Therefore, the adjectives listed in this dictionary ('ORD1-As', for short) are not only CAs but also other adjectives which are not morphosemantically transparent. According to my own survey, ORD1-As are listed in the microstructures of 496 key

concepts which function as their BNs. The Table 4.3 is the complete list of ORD1-As under their BNs—with ORD1-As cross-referenced with Readers2's 'lexically related adjective forms':

Table 4.3 ORD1's Treatment of ORD1-As

[Notes: (X) in the row 'Readers2's Treatment' shows that the CA is listed in Readers2. Native words in the row 'ORD1-As' are shown in boldface.]

Headwords under which ORD1-As are listed	ORD1-As	Notes	Readers2's Treatment
abbot	abbatial		
abdomen	coeliac, ventral		
Aberdeen	Aberdonian		
actor	histrionic		
afternoon	postmeridian		
ant	formic		
anus	anal	Not suppletive.	
ape	simian		
apex	apical	Not suppletive?	
appetite	orectic		
arbitrator	arbitral	Not suppletive?	
archdeacon	archidiaconal		
archery	toxophilite		
architect	architectonic		
argument	eristic		
arm	brachial		X (def. 1)
armed forces	military		
arms	heraldic		
army	military	BN should be *armed forces*?	
ash	cinerary, cinerous		
asthma	asthmatic	Not suppletive.	

baby	infantile	BN should be *infant.*	
back	dorsal		
backbone	spinal, myeloid		
balance	equilibrious	BN should be *equilibrium*?	
bath	balneal		X (def. 1a)
beach	littoral		X
bean	leguminous		
bear	ursine		
beast	bestial, animal, feral		
bee	apian		X (def. 1; with *apiarian*)
beetle	coleopterous		
beginning	embryonic, incipient, inceptive, inchoate, initial, nascent		
bird	avian, ornithic		X (def. 1; only *avian*)
birth	natal		X (def. 1a)
bishop	episcopal, pontifical		X (def. 1; only *episcopal*)
bladder	cystic, vesical		
blood	haemal, haematic, sanguineous		
blood vessel	vascular, venous		
blue	azure, cyanic		
blush	erubescent		

body	corporal, corporeal, personal, somatic		X (def. 1a; only *corporeal*)
bone	osseous, osteal		
bone marrow	myeloid		
borough	municipal		
brain	cerebral, encephalic		X (def. 1a; only *cerebral*)
branch	ramose		
breast	mammary, mamillary, pectoral		
breath	respiratory		
bristle	setaceous		
brother	fraternal		X (def. 1a)
building	architectural		
bulge	bulbous, tumescent		
bull	taurine		X (def. 1a)
bundle	fascicular, fasciculate		X (def. 1; only *fascicular*)
burden	onerous		X (def. 1)
burial	funerary, sepulchral		
Cambridge University	Cantabrigian		
cancer	carcinomatous		
cannibal	anthropophagous		
Carthage	Punic		
cartilage	cartilaginous		
carving	glyptic		
cat	feline		X (def. 1)

cattle	bovine		
cause	aetiological		
chalk	calcareous		
chamber	cameral		
chance	fortuitous		X (def. 1a)
charity	eleemosynary		
Charlemagne	Carolingian, Carlovingian		
Charles I and II	Carolean, Caroline		
cheek	buccal, malar		
cheese	caseous		
cherub	cherubic	Not suppletive.	
chest	pectoral, thoracic		X (def. 1; only *pectoral*)
child	filial		
childbirth	obstetric, puerperal		
choir	choral		
chorus	choral, choric	Not suppletive.	
Christ	dominical		
church	ecclesiastical, ecclesial		X (def. 2a; only *ecclesiastical*)
Church of England	Anglican		
citizen	civil		
city	civic, urban		X (def. 1a; with *municipal*)
clerk	clerical		
climax	climactic		
cloister	claustral		
clothes	sartorial		

cloud	nebulous		
club	clavate, claviform		
coast	littoral		X (def. 1a)
coin	numismatic, nummular		
college	collegial, collegiate		
colony	colonial	Not suppletive.	
colour	chromatic		
command	mandatory, preceptive		
company	corporate		
complaint	querulous		
compressed air	pneumatic		
computer	computational	Not suppletive.	
cone	conical, conic, conoid	Not suppletive.	
connect	conjunctive		
conscience	conscientious	Not suppletive.	
consent	consensual	Not suppletive.	
contract	contractual, contractural	Not suppletive.	
convent	conventual	Not suppletive.	
cookery	culinary		
copper	cupric, cuprous		X (def. 1a)
cough	tussive		
council	conciliar		
counterpoint	contrapuntal		
country	rural, rustic, pastoral, bucolic		X (def. 3a; only *pastoral* and *rural*)
crime	nefarious	QAdj?	
crow	corvine		X (def. 1a)

crown	coronal		
cure	sanative, therapeutic		
curve	sinuous		
Cyprus	Cypriot		
Dante	Dantean, Dantesque	Not suppletive.	
daughter	filial		
dawn	auroral		X (def. 1a)
day	diurnal		
deacon	diaconal		
dean	decanal		X (def.1)
deer	cervine		X (def. 1a)
delay	dilatory		
demon	demoniac, demoniacal, demonic		
devil	diabolic, diabolical		
dialogue	dialogic	Not suppletive.	
diamond	diamantine		
dictator	dictatorial	Not suppletive.	
dictionary	lexical		
diet	dietary, dietetic	Not suppletive.	
difference	differential	Not suppletive.	
digestion	peptic		
dinner	prandial		
diocese	diocesan	Not suppletive.	
disease	morbid		
dog	canine		X (def. 1a; following the star symbol)
drawing	graphic		

dream	oneiric		
duke	ducal	Not suppletive.	
duty	deontic		
each other	mutual, reciprocal		
eagle	aquiline		X (def. 1)
ear	aural, auricular		X (def. 1; only *aural*)
earth	terrestrial, terrene		X (def. 1a; *terrestrial* and *telluric*)
earthquake	seismic		X
east	oriental		X (def. 2b)
east Asia	oriental		
Easter	paschal		X
echo	echoic	Not suppletive.	
eclipse	ecliptic	Not suppletive.	
edge	peripheral		
egg-shaped	oval, ovate, ovoid		
election	elective, electoral	*Elective* is not suppletive.	
elephant	elephantine	Not suppletive.	
emperor	imperial		
empire	imperial		
enemy	inimical		X
engraving	glyptic		
epoch	epochal	Not suppletive.	
equality	egalitarian		
equator	equatorial	Not suppletive.	
equinox	equinoctial		
eye	ocular, ophthalmic, optic		X (def. 1a; *ocular* and *ophthalmic*)
eyebrow	superciliary		
eyelash	ciliary		
eyelid	ciliary, palpebral		

face	facial	Not suppletive.	
fact	factual	Not suppletive.	
fair	equitable, evenhanded, just	*Evenhanded* is native.	
family	familial	Not suppletive.	
father	paternal		
feast	festal	Not suppletive?	
fever	febrile		X (def. 1)
film	cinematic	BN should be *cinema*?	
finger	digital		X (def. 1a)
fire	**fiery**	Native formation.	
fireworks	pyrotechnic		
fish	piscine		X (def. 1a)
fishing	piscatorial, piscatory		
flag	vexillary		
flood	diluvial, diluvian		X (def. 1a; only *deluvial*)
flour	farinaceous		
flower	floral		X (def. 1)
food	alimentary		X (def. 1)
forehead	frontal		
forest	sylvan		
formula	formulaic	Not suppletive.	
fowl	gallinaceous		
fox	vulpine		
frog	batrachian		
funeral	funerary	Not suppletive.	

fungus	fungoid, fungous	Not suppletive.	X (adjectival use of *fungus*, cross-referenced to **fungous**)
galaxy	galactic	Not suppletive.	
garlic	alliaceous		
gas	gaseous	Not suppletive.	
gene	genetic	Not suppletive.	
geometry	geometric	Not suppletive.	
ghost	spectral		X (def. 1a)
gland	glandular	BN should be *glandule*?	
goat	caprine, hircine		X (def. 1a; *capric*, *caprine*, and *hircine*)
god	divine		
goose	anserine		X (def. 1)
grain	granular		
grammar	grammatical	Not suppletive?	
grass	graminaceous, germanous		X (def. 1a; *verdant*)
Greek	Hellenic		
green	verdant		X (def. 1b)
groin	inguinal		
groove	sulcate		
group	collegial, generic		
guard	custodial		
guardian	tutelary		
gum	gingival		X
gut	visceral		X (def. 1a)
hair	capillary, pilose		
hairdressing	tonsorial		

hand	manual, palmate	BN of *palmate* is *palm*?	X (def. 1a; only *manual*)
hare	leporine		
head	cephalic		X (def. 1a)
hearing	acoustic, auditory, aural		
heart	cardiac, coronary		X (def. 1 only, *cardiac*)
heat	thermal, thermic, caloric		X (def. 1a; only *thermal*)
heaven	celestial		
Hebrew	Hebraic		
hedgehog	erinaceous		
heir	hereditary		
helix	helical, helicoid	Not suppletive.	
hell	infernal		
hemp	**hempen**	Native formation.	
herb	herbal	Not suppletive.	
hermit	eremitic		
hip	sciatic		
homosexuality	gay, **pink**, **queer**		
horn	corneous		X (def. 1a)
horse	equine		X (def. 1a)
horse-riding	equestrian		
hour	horal		
household	domestic, domiciliary		
hunting	venatic		
hygiene	sanitary		
ice	gelid, glacial		X (only *glacial*)
illusion	illusory	Not suppletive.	

intestines	enteric		X (*alvine*)
Ireland	Hibernian		
iron	ferric, ferrous		X (def. 1a)
island	insular		X (def. 1a)
Isle of Man	Manx	Not suppletive?	Cross-referenced to **Man**, which has the form *Manx* as its adjective.
jaw	gnathic, maxillary		
jelly	gelatinous		
Jew	Judaic, Semitic		
job	vocational		
judge	judicial		
kidney	renal, nephritic		X (def. 1; only *renal*)
king	royal, regal		
kitchen	culinary		
knowledge	epistemic		
lake	lacustrine		
land	terrestrial		X (def. 1)
landowner	**landed**	Not suppletive. Native formation.	
language	lingual, linguistic		
larynx	laryngeal	Not suppletive?	
lavatory	lavatorial	Not suppletive.	
law	legal		X (def. 1; *judicial*, *judical*, and *legal*, following the star symbol)
lawcourt	judicial, juridical		
leaf	foliaceous, foliate		
leap year	bissextile		

left	sinistral		X (def. 1; *sinister* and *sinistral*)
leg	crural		
lemon	citric, citrous		
leprosy	leprous	Not suppletive.	
letter	epistolary		
letter[2]	literal		
lie	mendacious		X
life	animate, vital		X (def 1a; only *animate*)
light	photic		
line	lineal, linear		
lion	leonine		X (def. 1a)
lip	labial		
liturgy	liturgical	Not suppletive.	
liver	hepatic		X (def.1)
Liverpool	Liverpudlian		X (as a run-on)
lizard	saurian		
loin	lumbar		X
love	amorous, amatory		
lung	pulmonary		X (def. 1)
lymph	lymphatic	Not suppletive.	
machine	mechanical		
Madrid	Madrilenian		X (as a run-on)
man	male, virile		
Manchester	Mancunian		X (def. 1 (1))
marble	marmoreal		
marriage	bridal, conjugal, connubial, marital, matrimonial, nuptial		

marsh	paludal		
Mary	Marian		
mass	molar		
master	magisterial		
meaning	semantic		
measurement	mensural, metrical		
medicine	pharmaceutical		
menstruation	menstrual, menstruous	Not suppletive?	
middle	medial, median		(*middle* (musical), cross-referenced to **median**)
milk	**dairy**, lactic, lacteal		
mind	mental, noetic, psychological		X (def. 1a; only *mental*)
mirror	catoptric, specular		
Monaco	Monegasque		
monastery	claustral		
money	pecuniary, monetary, numismatic		
monk	monastic		X (def. 1)
monkey	simian		
moon	lunar		X (def. 1a)
Moscow	Muscovite		
Moses	Mosaic		
mother	maternal		
motion	kinetic		
mountain	montane		

mouse	murine		
mouth	oral, buccal	BN of *buccal* is *cheek*?	
movement	kinetic		
mucus	mucoid, mucous	Not suppletive?	
nail	ungual		
name	onomastic		
Naples	Neapolitan		
nation	ethnic		
navel	umbilical		
navigation	nautical		
neck	cervical, jugular		
nerve	neural		
net	retiform		
night	nocturnal		
nipple	mamillary		
nitrogen	nitrous		
Noah	Noachian		
north	boreal		
Norway	Norwegian		X (after a star symbol)
nose	nasal, rhinal		
nostril	narial		
noun	nominal		
number	numerical		
nunnery	claustral		
oil	oleaginous		
old age	gerontic		
old woman	anile		
opium	opiate		
orgy	orgiastic	Not suppletive?	
Orkneys	Orcadian		X

ostrich	struthious		
ovary	ovarian	Not suppletive.	
owner	proprietary		
Oxford University	Oxonian		
painter	painterly	Not suppletive.	
palace	palatial	Not suppletive?	
palate	palatine	Not suppletive?	
parish	parochial		
parrot	psittacine		X
Passover	paschal		
peafowl	pavonine		
penis	penile		
phallus	priapic		
phosphorus	phosphoric, phosphorous	Not suppletive.	
phrase	phrasal	Not suppletive.	
pig	porcine		X (def. 1; with *suilline*)
poison	toxic		
pope	papal, pontifical		
pottery	fictile		
praise	laudatory		
preaching	homiletic		
pregnancy	antenatal, maternity, prenatal		
priest	clerical, hieratic, sacerdotal		
prison	custodial		
prophet	mantic		
Provence	Provencal	Not suppletive.	

punishment	disciplinary, penal, punitive		
pus	purulent		
queen	royal, regal		
question	interrogative		
rain	pluvial		
rat	murine		
ray	radial		
reason	rational		
reign	regnal		
reproduction	generative		
rib	costal		
ring	annular		
river	fluvial, fluviatile, potamic, riverine	*Riverine* is not suppletive.	X (def. 1; only 'fluvial')
river bank	riparian		
rope	funicular (*often used of things* (*e.g.* a mountain railway) *formerly operated by ropes*)		
rule	hegemonic		
rust	ferruginous		
sailor	nautical		
salt	saline		
scale	squamous		
scholarship	academic		
school	scholastic		
scurvy	scorbutic		
sea	marine, maritime, nautical		X (def. 1a; only *marine* and *maritime*)

seed	seminal		X (def. 1a)
semen	seminal, spermatic	BN of *spermatic* is *sperm*?	
senior citizen	**elderly**		
seven	septenary		
sexual activity	carnal, venereal		
sheep	ovine		
shepherd	bucolic		
ship	marine, maritime		
shore	littoral		X
sickle	falcate		
side	lateral		
sight	optic, optical, visual		X (def. 1a; only *visual*)
skin	cutaneous		
skull	cephalic, cranial		
slave	servile		
smell	olfactory (sense of smell); fetid, mephitic, **rank** (foul smell); osmic (either)	*Rank* is native.	X (only *olfactory*)
snake	anguine, colubrine, serpentine		
soap	saponaceous		
sole of the foot	plantar, volar		
son	filial		
soot	fuliginous		
sorrow	dolorous		
sound	acoustic, sonic		

south	austral, meridional		X (def. 1; *meridional* and *austral*)
sovereign	regal		
space	celestial		(def. 1a; cross-referenced to **spacious**)
speech	lingual, oral		
spin	rotary		
spleen	splenic	Not suppletive?	
spring	vernal		X (def. 4a)
standard	normative		
star	astral, sidereal, stellar		X (def. 1a; *astral*, *sidereal*, and *stellar*)
stepmother	novercal		
stomach	gastric		X (def. 1)
stone	lapidary, lithic		
straight line	rectilinear		
sugar	saccharine		X (def. 1)
summer	aestival		X
sun	solar		X (def. 1a; *helical* and *solar*)
Sunday	dominical		
surgery	operative		
tail	caudal		
taste	aesthetic, gustatory		
taxation	fiscal		
teaching	didactic, pedagogic		
tear	lachrymal		
thought	noetic		
thousandth	millesimal		

three	ternary, treble, triple		
threshold	liminal		X (def. 1)
throat	gular, jugular		(def. 1a; *guttural* and *laryngeal*)
time	chronological, temporal		X (def. 1a; only *temporal*)
tomb	sepulchral		
tongue	glossal, lingual		X (def. 1a; only *lingual*)
tooth	dental		X (def. 1a)
touch	tactile		X (def. 1a)
town	civic, municipal, urban		
trade	economic, mercantile		
tree	arboreal, dendroid		X (def. 1a; only *arboreal*)
trust	fiduciary		(def. 1a; *fiducial*)
turpentine	terebinthine		
twelve	dodecimal, duodenary		
twenty	vigesimal		
twilight	crepuscular		X (adjectival use cross-referenced to **crepuscular**)
two	binary, double, dual		
uncle	avuncular		X (def. 1)
universe	cosmic		
university	academic		
uterus	uterine	Not suppletive.	
viceroy	viceregal		

vinegar	acetic		
vocabulary	lexical		
voice	vocal		
wall	mural		X (def. 1a)
war	martial		(def. 1a; *belligerent*)
wasp	vespine		X
water	aquatic, aqueous		X (def. 1a, *aqueous*; def 2a, *aquatic*)
wedge	cuneate		
week	hebdomadal		X (def. 1a)
Welsh	Cambrian, Cymric		
west	occidental		X (def. 2a; *hesperian* and *occidental*)
wife	uxorial		
will	volitional, voluntary		X (def. 1; only *voluntary*)
will[2]	testamentary		
window	fenestral		X (def. 1a)
wine	vinous		
wing	alar		
winter	hibernal, hiemal		X (def. 1)
wolf	lupine		X (def. 1a)
woman	female, feminine		X (adjectival use, cross-referenced to **female**)
wood	ligneous		
word	verbal, lexical		
worm	vermicular, vermiform		
worship	devotional		
wrist	carpal		

writing	graphic		
year	annual		X (def. 1a)

4.4.5. *The Oxford Thesaurus of English*, Second Edition (OTE2)

By my own count, there are 342 CAs in OTE2, all of which are preceded by the semantic description 'relating to ...'. Some of them have additional semantic description such as 'relating to seven years' (for *septennial* at **seven**), and 'relating to the sense of smell' (for *olfactory* at **smell**). As to the WORD LINKS, OTE2 says that they 'supply words which are not actual synonyms but which have a different kind of relation to the headword.' (x) Of course, CAs can be accommodated here because being RAdjs, they all have the same transparent semantic relations (i.e. 'relating to ...') to their BNs. Table 4.4 is the complete list of CAs treated in WORD LINKS of OTE2:

Table 4.4 CAs Treated in WORD LINKS of OTE2

Headwords as BNs	CAs	Notes
abbey	abbatial	
abbot	abbatial	
abdomen	abdominal, ventral, coeliac	
actor, actress	histrionic, theatrical, thespian	
agriculture	agrarian	
air	aerial	
animal	faunal, zoological	
ant	formic	[With *myrmeco-*.]
ape	simian	
apex	apical	
archbishop	archiepiscopal	

architecture	architectonic	
arm	brachial	
army	military, martial	
ash	cinerary	
author	auctorial	
baby	infantile	
back	dorsal, lumbar	
backbone	spinal, vertebral	
bank	riparian, riverine	relating to a river bank
bath	balneal, balneary	
bear	ursine	
bee	apian	
beetle	coleopteran, coleopterous	
begin	inceptive, initial	relating to a beginning
bird	avian	
birth	natal	relating to one's birth
bishop	episcopal	
bladder	cystic, vesical	
blood	haemal, haemic, haematic; *archaic* sanguineous	
body	corporal, corporeal, somatic	
bow	arcuate	relating to archer's bows (rare)
brain	cerebral, encephalic	
breath	respiratory	
bridge	pontine	
brother	fraternal	
building	tectonic	
bull	taurine	

bundle	fascicular	
burial	funerary, sepulchral	
butterfly	lepidopteran	
buttocks	natal	
cancer	carcinomatous	
carving	glyptic	
cat	feline	
cattle	bovine	
chalk	calcareous	(chalky)
cheek	buccal, malar	
cheese	caseous	
chest	pectoral, thoracic	
childbirth	obstetric	
choir	choral	
church	ecclesiastical	
cinema	cinematographic	
city	urban, civic, metropolitan	
claw	ungual	
clergy	clerical	
clothes	sartorial	
coast	littoral	
coin	numismatic	
colour	chromatic	
company	corporate	
copper	cupric, cuprous	
cough	tussive	As a 'related prefix'. [Probably an error. It is an adjective. (TK)?]
court	forensic	relating to law courts
crime	felonious	
date	chronological	relating to dates

daughter	filial	relating to a daughter or son
day	diurnal	
deacon	diaconal	
deer	cervine	
devil	diabolical, diabolic	relating to the Devil
diamond	diamantine	
dictionary	lexicographic	
dinner	prandial	
disease	pathological	
dog	canine	
donkey	asinine	
drawing	graphic	
dream	oneiric	
dress	sartorial	
drug	pharmaceutical	
earthquake	seismic	
education	pedagogic	
eight	octonary	
eight	octennial	relating to eight years
emperor	imperial	
empire	imperial	
experiment	empirical	
eye	ocular, ophthalmic, optic	
eyelash	ciliary	
eyelid	palpebral, ciliary	
farming	agrarian	relating to agriculture
fat	lipoid	
father	paternal	
fever	febrile	
film	cinematographic	

finance	fiscal	
finger	digital	
fishing	halieutic	
five	quinary	
five	quinquennial	relating to five years
flag	vexillary	
flood	diluvial	
flower	floral	
food	alimentary, culinary	
forehead	frontal	
forest	sylvan	
four	quaternary	
four	quadrennial	relating to four years
fox	vulpine	
frog	batrachian, anuran	
garden	horticultural	
garlic	alliaceous	
Germany	Germanic, Teutonic	
gland	glandular	
glass	vitreous	
goat	caprine	
god	divine	
gold	auric, aurous	
goose	anserine	
governor	gubernatorial	
grass	graminaceous	
groin	inguinal	
guardian	tutelary	
gullet	oesophageal	
gum[2]	gingival	

gut	visceral, enteric	
hair	capillaceous	
hand	manual	
hare	leporine	
health	sanitary	
hearing	auditory, audial, aural, acoustic	
heart	cardiac	
heat	thermal, caloric	
heaven	celestial, empyrean	
hedgehog	erinaceous	
hell	infernal	
hermit	eremitic	
hips	sciatic	
hoof	ungual	
horse	equine, hippic	
hundred	centenary, centennial	
ice	gelid, glacial	
inheritance	hereditary	
intestines	enteric, visceral	
island	insular	
jaw	mandibular, maxillary	
Jew	Judaic, Semitic	
job	vocational	
justice	judicial	relating to a system of justice
kidney	renal, nephritic	
king	regal	
knowledge	gnostic	
land	terrestrial	

language	linguistic	
larynx	laryngeal	
law	legal, judicial, juridical, jural	
law court	judicial, juridical	
lead	plumbic, plumbous	
leaf	foliaceous	
left	sinistral	
leg	crural	
letter	literal	relating to alphabetical letters
letter	epistolary	relating to letters (correspondence)
limb	appendicular	
lion	leonine	
lip	labial	
liver	hepatic	
lizard	saurian	
louse	pedicular	relating to or infested with lice
love	amatory	
lunch	prandial	
lung	pulmonary	
machine	mechanical	
man	male, masculine, virile	
map	cartographic	
marble	marmoreal	
marriage	marital, matrimonial, nuptial, conjugal, connubial, spousal	
meal	prandial	

meaning	semantic	
medicine	pharmaceutical	
memory	mnemonic	
merchant	mercantile, commercial	
midday	meridional	
milk	dairy, lactic	[*Dairy* is native and it is not a CA.]
mind	mental, cognitive	
mirror	catoptric, specular	
money	pecuniary, monetary	
monk	monastic	
monkey	simian	
moon	lunar	
mother	maternal	
motion	kinetic	
mountain	orographic	
mouse	murine	
mouth	oral, buccal	
movement	kinetic	
nail	ungual	
name	nominal, onomastic	
naval	umbilical	
neck	cervical, jugular	
nerve	neural	relating to nerves in the body
night	nocturnal	
nine	nonary	
nipple	mamillary	
noon	meridional	
nose	nasal, rhinal	
noun	nominal	

number	numerical	
nutrition	trophic	
odour	osmic, olfactory	
old	gerontic	relating to old age
old	geriatric	relating to old people
one	unitary	
palm[1]	volar	
parish	parochial	
parrot	psittacine	
pasture	pastoral	
people	demotic, plebeian	relating to (ordinary) people
pig	porcine	
pitch[2]	piceous	
pole[2]	bipolar	relating to both the North and South Poles
pope	papal, pontifical	
pottery	ceramic, fictile	
preach	homiletic	relating to preaching
pregnancy	antenatal, prenatal, gestational, gestatory	
priest	clerical, hieratic, sacerdotal	
prison	carceral, custodial	
punishment	punitive, penal	
purify	lustral	relating to ceremonial purification
pus	purulent	
question	interrogative	
rain	pluvial, pluvious, hyetal	
raven	corvine	

reason	rational	
reign	regnal	
rib	costal	
right	dextral	relating to the right-hand side
river	fluvial, potamic, riparian, riverine	
root	radical	
rope	funicular	
school	scholastic	
sea	marine, maritime, nautical	
seal[2]	phocine	
seizure	ictal	(medicine)
semen	seminal	
sermon	homiletic	
seven	septenary	
seven	septennial	relating to seven years
sewing	sutorial, sutorian	
sex	carnal	
shark	squaloid	
sheep	ovine	
ship	marine, maritime, nautical, naval	
shore[1]	littoral	
side	lateral	relating to the side of something
sight	optical, visual	
sister	sororal	
six	senary	
six	sexennial	relating to six years
skin	cutaneous	

skull	cranial	
smell	osmic	
smell	olfactory	relating to the sense of smell
snake	colubrine, ophidian, serpentine, anguine	
snow	niveous, nival	
soap	saponaceous	
soldier	military	
son	filial	
soot	fuliginous	
sound	acoustic, sonic, aural, audio	
Spain	Hispanic	
speech	lingual, oral, phonetic, phonic	
spine	vertebral	
spring	vernal	relating to the season of spring
squirrel	sciurine	
stalk[1]	cauline	
star	astral, sidereal, stellar	
stem[1]	cauline	relating to stalks
stepmother	novercal	
stomach	gastric	
stone	lithic, lapidary	
sugar	saccharine	
summer	aestival	
sun	solar	
Sunday	dominical	

sweat	sudatory, sudorific	
tail	caudal, cercal	
tailor	sartorial	relating to tailoring
taste	gustative, gustatory	relating to the sense of taste
tax	fiscal	
tear[2]	lachrymal	
ten	decimal, denary	
ten	decennial	relating to ten years
thousand	millenary	
three	triple, treble, ternary	
three	triennial	
threshold	liminal	
throat	guttural, jugular	
time	chronological, horological, temporal	
toad	batrachian, anural	
today	hodiernal	
tomb	sepulchral	
tongue	lingual, glossal	
tooth	dental	
touch	tactile, haptic	
town	municipal, urban	
trade	mercantile	
tree	arboreal	
tremor	seismic	
trust	fiduciary	
twelve	duodecimal, duodenary	
twenty	vigesimal	

twilight	crepuscular	
two	binary, dual, dyadic	
underworld	Plutonic	
universe	cosmic	
vehicle	automotive	
vein	vascular, venous	
vision	visual, optical	
vow	votive	
wall	mural	
war	belligerent, martial	
water	aqueous	
weasel	musteline	
wedding	nuptial	
weep	lachrymal	relating to weeping
wife	uxorial	
wind[1]	aeolian	
windpipe	tracheal	
wine	vinous	
winter	hibernal	
wish	precatorial	
wolf	lupine	
woman	female, feminine	
wood	ligneous	
wool	lanate	
word	verbal, lexical	
world	mondial	relating to the whole world
writing	scriptorial	

4.4.6. *Modifiers* (MOD)

MOD is a list of those adjectives which are not 'created by the addition of a suffix' and which undergo 'a somewhat more drastic change in the base

word'. (vii) By my own count, the number of the lemmata starting with the letters A and B is 480 (246 and 234 lemmata, respectively). In terms of its number of listed CAs, MOD is definitely one of the largest. It contains those which are too special and too limited for general use—for example, *haliotoid* (~ abalone), *melittological* (~ bee), *muliebral* (~ woman), *excandescence* (~ heat), etc.

However, MOD also contains many dubious cases such as *Disneyesque* at **animation**, *familiar* at **acquaintance**, and the like. We must also note that MOD contains those whose RAdj-hood is dubious—witness *achievable* at **accomplishment**, *invective* at **accusation**, which have their own evaluative meanings, rather than simple relational ones.

The following shows the microstructure of **bird**:

(4.3) **bird,** avian; ornithic; ornithologic, ornithological; volucrine; (~ eater) avicolous; (~ egg) oologic, oological; (~ lover) ornithophilous; (~ nest) caliological, nidological; (observation of ~s) ornithomantic; (wading ~s) grallatorial; (young ~) neossological.

(4.3) clearly shows that except for the first five adjectives, MOD's lemmata are better to be understood as key concepts or guide words. Of all the adjectives in (4.3), *avicolous*, *oologic*, *caliological*, *nidological*, *ornithomantic*, and *neossological* are not treated as lemmata in Readers2, which clearly shows that they are not the kinds of adjectives ordinary speakers of English know. *Nidological* and *neossological* are not even treated in OED, which testifies to the fact that even lexicographers or specialists may not know them.

The editor of MOD, Urdang, is fully aware of this fact. He observes that '[...] the user should note that dictionaries do not provide much useful information about frequency and appropriateness–essentially, whether or not a word is actually used very often and, if so, in what contexts. For

that kind of information there is not, at present, a suitable reference book available. Therefore, the user must be careful to try to determine the level at which a word is customarily used in order to avoid awkwardness of style.' (Foreword of MOD, viii)

4.5. Considerations

4.5.1. Lexicographical Comparison

If we compare the above dictionaries, we can get the following findings:

Firstly, what we instantly notice is that none of the above dictionaries has special guidelines for choosing CAs treated in their microstructures or BNs under which CAs are listed. Although in semasiological dictionaries, the overall selection of CAs is considered reasonable, there are still handfuls of them which are rather special in nature. For example, SCD's coverage obviously remains rather narrow in comparison with the other dictionaries treated in this section. Besides, it is unfortunate that those treated in SCD include such 'hard word' adjectives as *eleemosynary* at **alms**, *pulicene* at **flea** (definition **1**), *quercine* at **oak** (definition **1**), and *zibeline* at **sable** (definition **1**). For some reason or another, Readers2 does not have such CAs as *paternal*, *maternal*, and *sororal* in the microstructures of **father**, **mother**, and **sister**, respectively, although it treats *fraternal* in the microstructure of **brother**. CED8, the only monolingual semasiological dictionary presently available which deals with CAs microstructurally, treats *paternal*, *maternal*, and *fraternal* at **father**, **mother**, **brother**, respectively, while it does not treat *sororal* at **sister**.[143] What is interesting about CED8 is that CED8 is more than willing to contain onomasiological information in its lemmata's microstructures, which makes it distinct from other dictionaries. This is shown by CED8's frequent use of cross-references with the cross-referred

[143] One of the reasons can be ascribed to the fact that *sister* is used less frequently than the other three. According to the British National Corpus (SketchEngine version on the web, http://corpora.sketchengine.co.uk/, is used), *father* has 22,959 hits, *mother* 27,014, and *brother* 11,721—whereas *sister* has only 8,481 hits.

lemmata shown in boldface preceded by such phrases as 'a variant of ...', 'another name for ...', and 'Compare ...'.

Onomasiological dictionaries likewise seem to have no criteria for choosing CAs. However, in the so-called 'word-finding dictionary', one of the subtypes of onomasiological dictionaries, more and more CAs are treated—as is witnessed by MOD. This indeed supports the following general observation made by Marello (1990: 1084): '[...] most thoroughly organised thesauri seem often to forget their readers' needs, as if their authors were enchanted by the idea of putting world and words in order or of revealing the hidden order of nature.'

Secondly, apart from word-finding type dictionaries, the mutual neutralisation between the semasiological dictionary and the onomasiological dictionary we have pointed out in 4.3.2 is surely under way. So far as CAs are concerned, semasiological dictionaries tend to contain more and more onomasiological information and onomasiological dictionaries tend to obey the alphabetical principle to become more like semasiological dictionaries. As to this inclusion of the polar characteristics, bilingual semasiological dictionaries take the lead. However, we should note that onomasiological word-finding dictionaries such as MOD also benefit from having another semasiological (alphabetical) wordlist. Note that as we see in 4.5.3, this trend of lexicographical neutralisation will be enhanced by the development of electronic dictionaries from now on.

Thirdly, the above discussions have shown the general lexicographical trend in America to provide little treatment for CAs. This makes a sharp contrast especially to bilingual lexicographical trend in Japan, in which CAs are given a special status in their microstructural treatment. In my opinion, this can be ascribed to the fact that the lexicographers in Japan, and probably some users in Japan, fully know the linguistic importance of CAs. As we shall see in Chapter 5, the Japanese lexis is also composed

of more than one lexical stratum; therefore, under the full recognition of the linguistic importance of suppletive RAdjs, they have given a fuller treatment to CAs. In Britain, on the other hand, CED8's treatment of CAs reflects British lexicographers' robust respect for semantics, the world of meaning. Note that as we have seen in 4.3.1, the distinction between semasiology and onomasiology has not been well established in the tradition of American linguistics, which has probably led to the general lexicographical apathy in treating them in their lexicography.

Fourthly, though the semasiological dictionaries surveyed in this chapter admit polysemy in their microstructures, the possibility of semasiological dictionaries should be sought whose headwords are monosemous. As is pointed out by Akasu et al. (1996: 5ff.) and Akasu et al. (2005: 130ff.), one of the merits of such 'monosemous' dictionaries as CIDE and CALD[144] is that they can express derivational relations more clearly since as we have seen in (4.1), not all meanings are inherited in derivatives. Also importantly, 'monosemous' dictionaries are in a sense similar to onomasiological dictionaries because there is always one-to-one relation between the form and the meaning. In spite of their problems,[145] their possibility is worth considering especially for intermediate-level dictionaries onwards.

4.5.2. How Should we Treat CAs Lexicographically?

The surveys given in 4.4 clearly show the general reluctance of semasiological dictionaries to treat CAs systematically, which is reasonable because, as we have noted, alphabetically arranged semasiological dictionaries destroy the link between words having related

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[144] CALD loosens the allegedly strict monosemy policy adopted in CIDE and tolerates minimum polysemy of headwords. Thus, in a strict sense, the policy adopted by these two Cantabrigian dictionaries might better be referred to as '(quasi-) monosemy-based approach' (Akasu et al., 2005: 133) to the headword.

[145] Among the problems of 'monosemous' dictionaries are: (a) that it is difficult to ensure monosemy of headwords, and (b) that such a dictionary would allow the proliferation of homonyms, which cause tremendous 'word-finding problems'. The solution proposed by CIDE and CALD was that they introduce semantic signposts. See Akasu et al. (1996, 2005) for their lexicographical analyses of these dictionaries.

meanings. On the other hand, onomasiological dictionaries tend to contain too many of them, some of which are too technical to be used. For example, the chance is rather remote for ordinary speakers of English to use such CAs as *dasypodid*, *edentate*, *loricate*, *xenarthral* (~ armadillo) (MOD); *arcuate* (~ bow) (OTE2); *ferruginous* (~ rust) (ORD1) without recourse to any dictionary at all. What seems to me interesting with regard to onomasiological dictionaries in general is the following observation made by Marello (1990: 1084): '[...] most thoroughly organised thesauri seem often to forget their readers' needs, as if their authors were enchanted by the idea of putting world and words in order or of revealing the hidden order of nature.' ORD1 and MOD are a case in point. It is evident that these onomasiological word-finding dictionaries have more or less fallen into this pitfall.

As to semasiological dictionaries, I am of the opinion that if they are targeted for the users of intermediate level onwards,[146] they should contain at least a certain amount of onomasiological information concerning CAs because the dissociation involved displays a crucial characteristic in the lexis of English. In that sense, one can safely conclude that CED8, Readers2, GEN3, and Chu-Eiwa7 are lexicographically significant.

However, editors should not attempt to accommodate too many CAs as they do with MOD. It seems to me that with regard to the selection of the CAs worth treating in their BN's microstructures, the following are reasonable guidelines: (a) Select those CAs which are frequently used, (b) Select those CAs whose BNs are basic in nature, and (c) Exclude those CAs which exhibit some sort of semantic or stylistic anomaly. As to (a) and (b), it is necessary for the selection itself to be based on certain reliable linguistic corpora. Indeed, one way to achieve this is to use some

[146] Though the precise characterisation of this level is beyond the scope of this thesis, suffice it to say that in Japan, 'the level 5 onwards' set up in Aizawa and Murata, eds. (2005) can considered a good candidate for this 'intermediate level'. This is because the level 5 is settled in the book for the university students taking liberal arts courses. (Aizawa and Murata, eds, 2005: 279)

reliable corpora or some corpus-based dictionaries as a filter to select appropriate CAs after collecting them by using onomasiological dictionaries. Indeed, such a selection method is taken in selecting CAs in Chu-Eiwa7.[147] As to (c), we should be careful to treat only those adjectives which have the meaning 'of, or pertaining to ...' and stylistically neutral. Thus, for example, I do not think that *rational* should be treated in the microstructure of **reason** because it is now used mainly to mean 'using reason or logic to think out a problem' (CED8), rather than to mean 'of, pertaining to reason'. Nor do I think that *Terpsichorean* should be treated in the microstructure of **dance** because of its special stylistic effect.[148]

This chapter has so far revealed that CAs have not been well treated in the history of English lexicography. I think that this lexicographically unfortunate situation can be ascribed to the following two factors: Firstly, there is a general reluctance to treat formally unsupported phenomena in linguistics. CAs are a case in point. This reluctance has been all the more enhanced by the rise of lexicalism in linguistics since the early 1970s.

Secondly, CAs constitute a gap in lexicographic treatment because they are either too difficult for beginners or already taken for granted by upper-level users. For example, many CAs are beyond the understanding of learners of English, which explains why they are not treated in bilingual students' dictionaries. In contrast, upper-level monolingual dictionary users have already acquired a good knowledge of CAs, which explains why those upper-level monolingual dictionaries which treat CAs in their BNs' microstructures tend to contain CAs which are too special to be used generally. Since the relative importance of CAs is considered to increase in the future as we are living in a gap-widening society intellectually as well as materially, the tack taken by CED8,

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[147] I owe this piece of information to Nobuyuki Higashi, one of the editors of Chu-Eiwa7.

[148] OALD7 gives the label '*formal* or *humorous*' for *Terpsichorean*. Note that CED8 does not treat *Terpsichorean* in the microstructure of **dance**.

Readers2, GEN3, and Chu-Eiwa7 concerning CAs can be regarded as a significant step towards users' better understanding of them.

Before closing this section, I would like to point out that onomasiological dictionaries have their own deficiencies. Firstly, they cannot provide enough information about individual CAs' grammatical properties. Usually, onomasiological dictionaries are just lists of semantically related words without any grammatical descriptions given. Being RAdjs, CAs are attributive-only adjectives, but it is often the case that onomasiological dictionaries have no space for explaining this fact.

Secondly, CAs often undergo semantic shifts and become QAdjs—witness *bovine* which is used to mean 'slow and slightly stupid' as in *Those students looked rather bovine*.[149] Note that they are rather difficult to treat in onomasiological dictionaries because many of them simply list related words without any grammatical or usage explanations. Not only onomasiological dictionaries but also semasiological ones, however, sometimes fail to capture such a shift in their microstructures. For example, as we have seen in 3.3.3, *orthogonal* (~ right angle) is frequently found to mean 'irrelevant' and to have predicative usage (as in [...] *these distinctions are orthogonal to the matter of scope*).[150] However, I know of no dictionaries on the market now containing this shifted meaning of *orthogonal*.

Indeed, information concerning these semantic shifts is of great importance because it is not always easy for dictionary users to reach the shifted meanings. This is especially so in upper-level bilingual dictionaries because such a semantic speculation is more difficult when the user is a non-native speaker of English—witness that the expression *bovine students* would surely be misinterpreted by some Japanese students as 'brave students' because of the association that animal name

[149] See 3.3.3, Farsi (1968), Yasui et al. (1974), Warren (1984), among others for detailed studies on the semantic shift of CAs.

[150] This particular example is taken from Beard (1994: 198). Italics and underline are mine.

has in Japanese.

4.5.3. On the Possibility of the Electronic Dictionary

So far, our discussions have been based entirely on paper-based dictionaries. However, especially since the beginning of the new millennium, we have seen a rapid progress of so-called electronic dictionaries. Thus, before closing this chapter, it is worth giving a brief remark on their relevance to the lexicographical treatment of CAs.

As is pointed out by de Caluwe and Taeldeman (2002), electronic dictionaries are important in integrating both semasiological and onomasiological aspects because they have little or no structural limitations. It should be easy to trace derivatives and compounds and by the aid of cross-reference or big corpora of examples, paradigmatic and syntagmatic meaning relations can also easily be shown to users.

This means that although their lexicographic significance waits for further future research, they can surely be very useful tools for users to understand CAs.

4.6. Summary

The discussion in this chapter has revealed the following:

- Given the dissociated nature of CAs, alphabetically arranged semasiological dictionaries destroy the link between CAs and their BNs.

- It is necessary for the semasiological dictionaries targeted for intermediate-level users onwards to contain onomasiological information concerning CAs. The best way is to treat them in the microstructures of their BNs, preferably with some appropriate cross-referencing device. Of all the present dictionaries on the market, CED8, Readers2, GEN3, and Chu-Eiwa7 take such an

approach.

- There are several onomasiological dictionaries which list CAs; however, their lists often tend to contain a great number of technical words not applicable for ordinary usage.

- The selection of BNs and CAs should be based on some reliable linguistic corpora and semantic/stylistic considerations, so that only a reasonable number of technical CAs are included.

- Information concerning CAs, such as that related to attributive-only-ness, or semantic shift, is difficult to present in onomasiological dictionaries. Thus, the microstructure of semasiological dictionaries should be appropriately revised to accommodate such information.

- The development of the electronic dictionary will enable us to capture various lexical relations hitherto impossible to present in the paper-based dictionary. The relations between CAs and their BNs will surely be one of them.

Indeed, as we shall see in Chapter 5, the knowledge of CAs in English is likened to that of Chinese characters (*kanji*) in Japanese, many of which have both Sino-Japanese readings (*on-yomi*) and native Japanese readings (*kun-yomi*). In the case of Japanese, the learning of Chinese characters is so deeply embedded in mother language education that after twelve years of one's compulsory education, one can automatically combine the two different kinds of readings by the time one finishes it. In the case of English, on the other hand, it is mainly up to speakers whether or not to acquire them, the result of which makes the knowledge of dissociation itself function as 'the language bar', first pointed out by Grove (1949). Such a bar should be overcome somehow in the event of speakers' language acquisition. Given the predominant reluctance to

treat formally unsupported phenomena in linguistics, I am certain that this is precisely the realm to which lexicography can contribute greatly.

Chapter 5
Sociolinguistics and Contrastive Studies of CAs

5.1. Introduction

Remember that CAs are defined as 'Latinate suppletive RAdjs'. Therefore, one of the important characteristics of CAs is their Latinateness. This is surely because of the mixed nature of the English lexis. As is well known, the history of the English lexis can be regarded primarily as that of lexical borrowing. Among the source languages of English's lexical borrowing, Romance languages are by far the largest providers. The literature on this heavy influence of Romance languages on English is copious. See Bradley (1970), Pyles and Algeo (1970), Denning and Leben (1995), Dalton-Puffer (1996), for example.

Therefore, the aim of this chapter is twofold. Firstly, we shall consider the sociolinguistic or stylistic aspects of CAs. By definition, CAs are Latinate RAdjs standing in suppletion to their BNs; therefore, they belong to the vocabulary layer of 'Neo-Latin basis' (Marchand, 1969: 7). Since this vocabulary layer is known as a sociolinguistically elevated layer of vocabulary, it can function as a class divider in the English-speaking world. We shall see how English-speaking people acquire knowledge about CAs and Latinate vocabulary in general.

Secondly, we shall provide contrastive studies between English and Japanese. Kajima (1976), Koshiishi (2002), Morioka (2004)[151], among others point out that a similar multi-layered lexis is observed in Japanese as well. Note that Britain and Japan are both island countries.[152] In the case of English, it has always been under the influence of the

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[151] I am grateful to Shigeo Yuasa, who drew my attention to series of Morioka's works.

[152] Incidentally, in the present context, 'island countries' (N1 + N2) cannot be replaced with 'insular countries' (CA (RAdj) + N). The adjective *insular* used to be a CA meaning '[formal] relating to, or like an island' (LDOCE4). However, it has undergone semantic shift we have seen in 3.3.3 and now it is used more frequently to mean 'interested in your own group, country, way of life etc and no others—used to show disapproval' (LDOCE4). Note that the final usage comment after a dash clearly shows that it is now used mainly as a QAdj.

continental Romance languages and culture from across the sea especially since the Norman Conquest. Interestingly, these cultural and linguistic situations in Britain are matched by parallel trends in Japanese, which has been under constant continental influence from China.

We shall start by considering various sociolinguistic aspects of CAs.

5.2. Sociolinguistic Nature of Collateral Adjectives and Latinate Vocabulary in General

Because of the extreme allomorphic nature of CAs and Latinate vocabulary in general—in Chapter 2, we have analysed it as 'suppletive'— native speakers of English normally have to memorise Latinate words one by one, which means that a tremendous burden on the memory on the part of speakers of English in acquiring them is required.

According to Beard (1980: 77), the mixed nature of English lexis can be ascribed to a series of linguistic factors: 'the forced spread of literacy, political and social pressures in English history, the high impact of science and technology on the language in modern time.' Thus, he continues to observe that '[t]here is no reason to suspect that this nest of factors will ever again accumulate with similar results' and finally concludes that this situation necessitates users of English to 'store an unusually large number of base items and depend less on derivational regularities and generalizations.' (77) As observed above, this leads to a tremendous burden on the memory on the part of users of English.

Indeed, this burden of memory that the Latinate vocabulary imposes on native-speakers functions as a social-class divider in the English-speaking world. To put it simply, the knowledge of Latinate vocabulary does matter in English-speaking society. The enormous number of reference books, vocabulary-expanding books, and word-study aids displayed in the bookshops can be considered to give good evidence to this.

In Koshiishi (2002: 82), I wrote '[s]imply stated, when you want to enter a university, you are required to show that you have a good knowledge of CAs. We could even say that knowing a lot of CAs is a key to the professional elite.' Such a statement, however, may sound a little too strong because increasingly little time is given to studying Latin now in schools and universities in the English-speaking world.[153] However, the following observation of Cummins shows that the above statement of mine basically holds true:

> [...] English is a hybrid language, composed of Anglo-Saxon that was in place roughly between the fifth century and the eleventh century, and following the Norman invasion, the Norman language based on Old French, Latin and Greek. Over the next three or four centuries, the two languages integrated to become English. This did not happen evenly over all domains and functions of language. The Anglo-Saxon lexicon remained the language of everyday interactions, whereas the Greek and Latin based language remained high status, and became the language of literacy. It is essential that pupils get access to this type of language if they are going to succeed in school. Research has repeatedly shown that EAL [i.e. English as an Additional Language] pupils take at least five years on average to bridge the gap. We know also that native speakers of English who come to school at age five conversation-proficient in English need to learn the literacy required in school. [...]
>
> (Cummins, 2001: 2)

According to Cummins, the Anglo-Saxon lexicon and Greek and Latin based language correspond to the well-known distinction in second language acquisition between Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP), respectively. In contrast with the most common words in English, which

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[153] This was pointed out by Andrew Jones (personal communication).

derive predominantly from Anglo-Saxon sources and are typically monosyllabic, academic words in general are polysyllabic, and will not appear in conversational interaction. Therefore, Cummins (2001) goes so far to conclude that academic English can be regarded as a different language. Actually, this is reminiscent of Grove's (1949) remark that there is 'a language bar' in the English-speaking world.

Corson (1985: Chapter 3) provides a detailed diachronic description of the emergence of this 'language bar' (i.e. his 'lexical bar'). According to him, in the English-speaking world, the bar is first erected in the fifteenth to seventeenth century. During this period, English has been deprived of its native, lexical dynamism, which was replaced by the erection of a lexical bar based on the Graeco-Latin vocabulary.

5.2.1. Dictionaries of Synonyms, Thesauri, etc.

To demonstrate the sociolinguistically high value of CAs and Latinate vocabulary, first of all, I would like to point out the historical fact that English has a long tradition of publishing good dictionaries of synonyms.

As we have seen in 2.3.1.3.2.2, what Pilch (1985) calls satellite words is one of the characteristics of lexical paradigms. Since many pseudo-paradigms are lexical paradigms in Pilch's terminology, CAs are often accompanied by satellite words. Since there are no complete synonyms in languages, speakers and writers of English have to face bundles of synonymous words everyday, from which they choose what they think to be appropriate in particular works or contexts. For the purpose of assisting people with choosing appropriate words, English has had a long tradition of producing dictionaries of synonyms.

The first dictionary of synonyms is John Trusler's (1735-1820) *The Difference Between Words Esteemed Synonyms*, published in 1766. This dictionary, however, was a translation of a similarly titled work

published in France;[154] hence it is generally assumed that the next one, Hester Lynch Piozzi's *British Synonymy; or An Attempt at Regulating the Choice of Words in Familiar Conversation*, published in 1794, is the first dictionary of synonyms in English lexicography. Kojima (1999: Chapter 6) observes that the first series of monolingual dictionaries in Britain originated as dictionaries of synonyms giving easier synonyms for hard words.

According to Kajima (1976: Chapter 5), English abounds in dictionaries of synonyms. He also points out that average English-speaking people have a deeper interest in synonyms than Japanese people do. Denning and Leben (1995: 3) estimate that *Webster's Third International Dictionary* contains 460,000 words and conclude that no other language comes close to English in a count of general vocabulary. It is highly probable that the richness in synonyms is partly responsible for this lexical abundance in English.

As to CAs, it is interesting that some monolingual dictionaries dare to deal with them as their subentries, or run-on entries. As I mentioned in Chapter 4, dictionaries published by Funk and Wagnalls in the 1950s used to put CAs under the entries of their base nouns. We shall repeat the following description in the Guide of *Standard Desk Dictionary*, first edition published by Funk and Wagnalls in 1964:

> Because of extensive borrowing in English from Norman French and Medieval Latin, we find a good many English nouns which have adjectives closely connected with them in meaning, but not in form, such as *arm* and *brachial*, *horse* and *equine*, *dog* and *canine*, *day* and *diurnal*, etc. These functionally related adjectives are defined in this dictionary in their alphabetic place, but as an added convenience

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[154] According to MWDS's INTRODUCTORY MATTER: SURVEY OF THE HISTORY OF ENGLISH SYNONYMY (5a), Trusler's source is Abbé Gabriel Giraud's *La Justesse de la langue Françoise ou les Différentes significations des mots qui passent pour être synonyms* published in1718.

> many of them are also shown with their associated nouns. Collateral adjectives follow the sense or senses of the noun to which they apply, and are introduced with a diamond symbol: ...
>
> (Guide of SCD: vi)

Indeed, this is striking because the macrostructure of dictionaries normally obeys the strict alphabetisation principle; and hence it is normally hard to connect words that are different in their forms. Therefore, as we discussed in Chapter 4, Funk and Wagnalls' policy of treating CAs as subentries or run-ons, which is an obvious violation of this principle, is eloquent testimony to the exceptional importance of CAs in English-speaking society.

5.2.2. Word Games and Vocabulary Expanders

Secondly, I would like to point out the importance of word games and so-called 'vocabulary-expanding books' in contributing to sociolinguistic or stylistic elevation of CAs.

As to word games, probably the most well known one in English-speaking world is crossword puzzles. According to vol. 3 of NEB (under the entry of **crossword puzzle**), the following is how this word game originates:

> The first crosswords appeared in England during the 19th century. They were of an elementary kind apparently derived from the letters read alike vertically and horizontally, and printed in children's puzzle books and various periodicals. In the United States, however, the puzzle developed into a serious adult pastime. The first modern crossword puzzle was published on Dec. 21, 1913, in the New York *World*'s Sunday supplement, *Fun*. It appeared as only one of a varied group of mental exercises, but it struck the fancy of the public. By 1923, crosswords were being published in most of the leading American newspapers, and the craze soon reached England. Soon almost all daily newspapers in the United States and Great Britain

had a crossword feature of some kind. The *Sunday Times* of London ran perhaps the most well-known puzzle.

(Vol. 3: 757)

Kajima (1976: 174) points out that this great popularity of crossword puzzles has contributed to a special branch of dictionaries of synonyms—i.e. thesauri.

In early days, clues were basically the definitions of the words to be answered, but gradually, the relationship between clues and the answers became complicated and these days, we often see such semantic clues as 'of, or pertaining to the springtime' (for the word *vernal*), or sometimes, such a metalinguistic clue as 'adjective of "spring"'. Evidently, what is tested here is the solver's general knowledge of CAs.

As to the proliferation of so-called 'vocabulary-expanding books', we have indeed plenty of them at hand—witness Ayers (1986), Denning and Leben (1995), Stockwell and Minkova (2001), among others. The basic strategy adopted in vocabulary expanders is as follows: (A) to appeal to the mechanism of abstract phonology to connect two different forms having the same meanings where possible, (B) to provide reasonably regular sound changes and allomorphy in Latin and Greek morphology, and (C) to provide a minimal list of Latin and Greek roots where no such abstract phonology is even remotely plausible. Normally, 'vocabulary-expanding books' differ according to the size of the space they allow for (C). Those targeted at linguistically naïve learners depend heavily on users' brute force of memory and hence (C) occupies a lot of space, whereas those to be used by linguistically trained people tend to allow larger space for (A) and (B) rather than for (C).

5.3. Contrastive Studies Between English and Japanese

CAs are still dissociated words which speakers of English have to acquire one by one. This is indeed a great task requiring a tremendous amount

of memory on the part of learners; what they do is to connect two totally unrelated forms with one common meaning as the following figure illustrates:

(5.1) [155] MEANING: 'spring'

FORMS: SPRING | VER (as in *vernal*)

Native | Latinate

Note that since *vernal* has no corresponding nouns sharing its stem, the relationship between *spring* and *vernal* is direct. Therefore, they can be regarded as suppletive. However, there are some cases in which suppletion is indirect—as witness the *breath-respiratory* pair. In this case, *breath* has a corresponding adjective based on derivation, namely *breathy*;[156] and *respiratory* has *respiration* as its base noun. Admittedly, in such a case, we see a fuzzy boundary between pseudo-paradigm and mere semantic relatedness.

Lipka (2002: 15, footnote 6) introduces G. Pascoe's remark that Persian and Japanese are similar to English because they both have a native vocabulary stratum plus a huge admixture of vocabulary from another source even less closely related than in English. Since I happen to be a native speaker of Japanese, I shall have a brief look at Japanese and make a contrastive study between English and Japanese.

In the case of Japanese, there are at least three different layers in terms of word-formation, i.e. native stratum, and two superstrata—one of which

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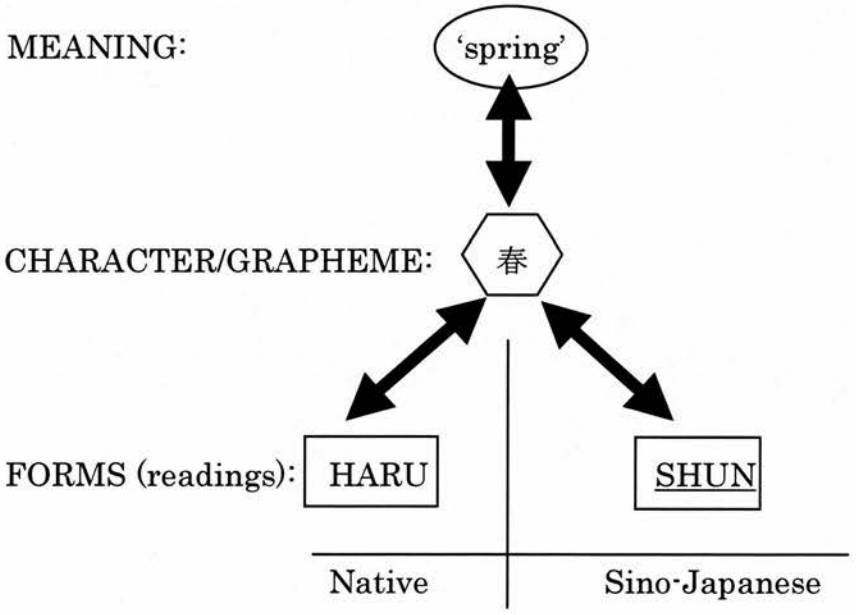
[155] To show their borrowed nature, foreign forms are underlined to differentiate native forms.

[156] Note that although breathy originally means '[o]f, pertaining to, or of the nature of breath' (OED), it is now used mainly to mean '[o]f the voice in singing: having an admixture of the sound of breathing'. (OED)

is that of Chinese loanwords and the other that of non-Chinese—mainly Western—loanwords. Interestingly, Japanese has developed three different systems of writing which correspond to this stratal difference—(A) that of Chinese characters called *kanji* (漢字), (B) that of *hiragana* syllabary (かな), and (C) that of *katakana* syllabary (カナ). Apart from (A), which we shall see soon in what follows, note that (B) is basically for expressing all native-based function words and (C) is for non-Chinese loanwords.

What is striking is the use of Chinese characters (A). Chinese characters function as mediators between native readings (called *kun*-readings ('訓読み') in Japanese) and Sino-Japanese readings for Chinese loanwords (called *on*-readings ('音読み') in Japanese), which can be illustrated in (5.2) below:

(5.2)[157]



5.3.1. Remarks on Japanese Graphomorphology

[157] The following are the notes for the transcription of Japanese adopted in what follows: (i) The alphabetisation of Japanese indicated all in capital letters follows what is called the Hepburn method. (To those who are not familiar with the Hepburn method, suffice it to say that it is similar to the way of reading the documents written in Old English. Postvocalic H indicates that the preceding vowel is long.) (ii) The symbol '=' shows that the both graphomorphemes combined have the free-morpheme status. Otherwise, the symbol '-' is used to connect morphemes. (iii) Non-native readings are shown in underlined forms, whereas native readings are shown in normal, non-underlined forms.

The above example shown in (5.2) shows that in Japanese more than one completely unrelated reading is connected by the aid of Chinese characters which function as a kind of mediator between them. However, a closer examination of the correspondences between meanings and forms reveals that the situation is a little more complicated than this.

According to Morioka (2004), the use of Chinese characters in Japanese is so peculiar in the world's languages that the morphology of Japanese should best be regarded as *graphomorphology* ('文字形態素論'—i.e. letter- or character-based morphology) rather than simple morphology.

Morioka draws our attention to the following four-fold typology of the uses of Chinese characters in Japanese:

(A) Those Chinese characters which have both native and Sino-Japanese readings. Note that these two different sources of readings 'alternate as if they were allomorphs of the same morpheme' (Morioka, 2004: 31, translation mine). He introduces the term *graphomorpheme* ('文字形態素') to explain this fact. The following are such examples:

(5.3) a. 愛 (MEDE, AI; 'love'), 庵 (IORI, AN; 'hermitage'), 印 (SHIRUSHI, IN; 'sign, symbol'), 運 (HAKOBI, UN; 'carrying'), 円 (MARU, EN; 'circle'), 縁 (YUKARI, EN; 'relationship, bond'), 音 (OTO, ON; 'sound'), 会 (AI, KAI; 'meeting'), 学 (MANABI, GAKU; 'learning'), 寒 (SAMUI, KAN; 'cold'), etc.

b. 山 (YAMA, SAN; 'mountain'), 川 (KAWA, SEN; 'river'), 草 (KUSA, SOH; 'grass'), 木 (KI, MOKU; 'tree'), 日 (NICHI, HI; 'day'), 月 (TSUKI, GETSU; 'moon'), 星 (HOSHI, SEI; 'star'), 雲 (KUMO, UN; 'cloud'), 人 (HITO, JIN; 'human'), 目 (ME, MOKU; 'eye'), 口 (KUCHI, KOH: 'mouth'), etc.

c. 愛=する (AI=SURU, 'to love'), 供=する (KYOH=SURU, 'to provide'), 屈=する (KUS=SURU, 'to succumb'), 応=ずる

(OH=ZURU, 'to reply'); 暗-に (AN-NI, 'implicitly'). 急-に (KYUH-NI, 'suddenly'); 御-飯 (GO-HAN, 'rice' [honorific]), 御-苑 (GYO-EN, 'garden' [honorific]), etc.

(Taken from Morioka, 2004: 18, with my own transcriptions and translations)

The examples in (5.3a) are those characters the Sino-Japanese readings of which can be used as free morphemes, whereas those in (5.3b) are those the Sino-Japanese readings of which can only be used as bound morphemes. The examples in (5.3c) are those in which Chinese characters are used in combined forms or derivational forms.

(B) Those Chinese characters having only Sino-Japanese readings. Those in (5.4a) can occur as free forms, while those in (5.4b) cannot.

(5.4) a. 案 (AN, 'plan'), 胃 (I, 'stomach), 駅 (EKI, 'station'), 液 (EKI, 'liquid'), 王 (OH, 'king), 恩 (ON, 'feeling of moral indebtedness'), 缶 (KAN, 'caddy, can'), 勘 (KAN, 'hunch'), etc.

b. 講ずる (KOH=ZURU, 'to lecture'), 信ずる (SHIN=ZURU, 'to believe'), 賀する (GA=SURU, 'to celebrate'); 単-に (TAN-NI, 'simply'), 特-に (TOKU-NI, 'especially'), etc.

(Taken from Morioka, 2004: 21, with my own transcriptions and translations)

Note that many examples in (5.4a) used to have their native readings as well, which later became obsolete—as is witnessed by 駅 (UMAYA), 王 (OOKIMI), etc. Morioka (2004: 22) observes that the examples in (5.4b) show how Sino-Japanese readings of these characters have been naturalised into Japanese, because =SURU ('-する') and -NI ('-に') are native morphemes.

(C) Those Chinese characters having only Sino-Japanese readings and are morphologically always bound. Morioka recognises two types:

(5.5) a. 哲 (TETSU, 'wisdom, cleverness') as in : 哲学 (TETSUGAKU, 'philosophy'), 哲人 (TETSUJIN, 'philosopher'), 哲理 (TETSURI, 'philosophical principles), 先哲 (SENTETSU, 'ancient philosopher'), 十哲 (JITTETSU, 'the ten disciples of (Confucius, etc.))

般 (HAN ~ PAN, 'a round of time, similar things or happenings') as in: 一般 (IPPAN, 'generality'), 全般(ZENPAN, 'universality'), 諸般 (SHOHAN, 'various circumstances'), 今般 (KONPAN, 'this time'), 先般 (SENPAN, 'some time ago')

b. 挨拶 (AISATSU, 'greetings'), 犠牲 (GISEI, 'sacrifice'), 躊躇 (CHUHCHO, 'hesitation'), 葡萄 (BUDOH, 'grapes'), 炬燵 (KOTATSU, 'quilt-covered foot-warmer')

(Taken from Morioka, 2004: 22-23,
with my own transcriptions and translations)

The examples in (5.5a) are those in which the Chinese characters used have gained a certain currency. However, those in (5.5b) are perfectly frozen combinations. Only connoisseurs of Japanese would be able to tell what 挨 (AI) in 挨拶 (AISATSU) in (5.5b) means, for example. The average Japanese would be able to instinctively presume that it has something to do with hands by the composition of the character '挨'—because the '扌' part of the character signifies 'the hand'— but that is the best he or she could do. Therefore, it is obvious that these Chinese characters in (5.5) are not completely naturalised into Japanese.

(D) Those Chinese characters having only native readings. The Chinese characters belonging to this category can be divided into two groups: (a) the so-called Japan-originated *kanji* (国字) ; namely, those which have been created in Japan so that there are no corresponding characters in Chinese, and (b) those which used to have Sino-Japanese readings but have lost them diachronically. See below:

(5.6) a. 俤 (OMOKAGE, 'one's personal image'), 俥 (KURUMA, 'rickshaw'), 凧 (TAKO, 'kite'), 凩 (KOGARASHI, 'wintry blast'), 凪 (NAGI, 'doldrums'), 峠 (TOHGE, 'mountain peak'), 噺 (HANASHI, 'tale-telling'), etc.

b. 杉 (SUGI, 'cedar'), 丼 (DON, 'bowl'), 娘 (MUSUME, 'young girl, daughter'), 芋 (IMO, 'potato'), 笠 (KASA, 'bamboo hat'), 葱 (NEGI, 'spring onion'), 彦 (HIKO, 'good boy'), etc.

(Taken from Morioka, 2004: 23-24, with my own transcriptions and translations)

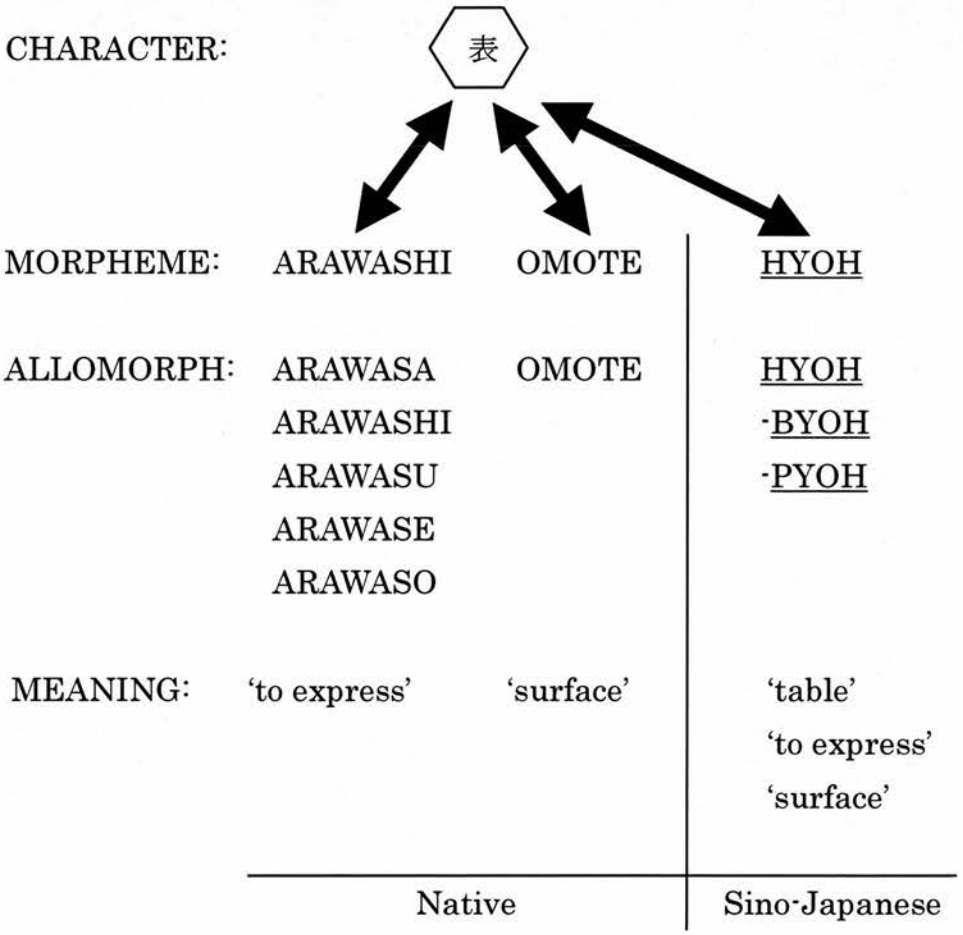
Some words of caution are in order concerning the notion of the morpheme and Morioka's terminology. There are some difficulties in analysing the Chinese characters in examples in (5.5) as graphomorphemes because their individual meanings are difficult for the average Japanese to identify. However hard we may try to stretch the applicability of the term morpheme, we do not think it is possible to apply it to the above cases because we cannot think of any particular meanings assigned to the characters in (5.5b). Although there are some cases of meaningless morphs as thematic vowels in Romance languages (S. R. Anderson, 1988: 153-154), these characters are different. Certainly, the Chinese characters in (5.5a, b) have more to do with idioms such as *kick the bucket* or lexicalised derivatives such as *hardly*, *absolutely* (meaning 'yes'), etc. than transparent combinations of morphemes.

Actually, what is observed in the Japanese usage of Chinese characters is that there are subtle differences of the applicability of the notion of the graphomorpheme. To the cases of those having both native and Sino-Japanese readings we have seen in (A), the notion of graphomorpheme can be relatively well applied. However, in the examples in (5.5), the meanings of the Chinese characters are difficult to identify and hence they are difficult to analyse as graphomorphemes. Indeed, this is one of the reasons why we keep on using the term native

and Sino-Japanese 'readings' rather than 'graphomorphemes' or 'morphemes' as in Morioka (2004) in the present thesis.

Note that there are further factors which make us suspect the overall applicability of the notion of the graphomorpheme. Firstly, there are many examples of Chinese characters integrating more than one different morpheme. See the following examples of the character 表:

(5.7)



Note that in the above example, one Chinese character integrates several different meanings. We should also note that HYOH and ARAWASHI, for example, cannot be considered in suppletive relationship with each other because their semantic correspondences are only partial.

This means that the Chinese character should more appropriately be considered a sort of 'bundle of one or more morphemes', rather than a

morpheme itself.[158]

Secondly, the situation seems all the more complicated by the fact that it sometimes happens that one can give relatively free native readings to Chinese characters—as is witnessed by the following examples:[159]

(5.8) a. 本気 (HONKI, 'seriousness'; 本 HON, 'real', 気 KI 'feeling'). The actual reading young people give is MAJI 'I mean it!'.

b. 親友 (SHIN'YUH, 'close friend'; 親 SHIN, 'close', 友 YUH, 'friend').
The actual reading in one adolescent novel in Japanese is RAIBARU 'rival'. (This is because one's true friends easily become one's rivals in one's adolescence.)

The above facts are just peculiar to Japanese and no other such languages are indeed known to us.

What seems to me interesting is that, as Morioka (2004: 34, 53) correctly observes, the users of Japanese have to develop their ability to make use of various kinds of 'paradigms'. This seems to come very close to our notion of paradigmaticity defined in 2.5. In the case of Japanese, part of its writing system which makes use of Chinese characters provides the basis for various paradigms in its lexis.

5.3.2. Differences Between Japanese and English

If we compare Japanese with English, we can note the following five differences: First of all, there is a difference in the importance of borrowed morphology. In Japanese, Chinese loanwords provide by far the most important sources in terms of word-formation, whereas the native

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[158] Of course, alternatively, one may adopt the monosemous morpheme hypothesis, but in the case of Japanese, one would be better off without taking such an option. This is because Japanese already has too many homophones. It is often pointed out that in order to disambiguate homophones, Japanese has developed many nominal classifiers.

[159] What is even more striking is the use of *rubi* ('ルビ') in Japanese, as explained in 5.3.2.

vocabulary provides only poor grounds for word-formation processes. Indeed, one of the reasons for this can be ascribed to the fact that native word formation increases the number of syllables and hence gradually comes to be not favoured. This makes a sharp contrast to English word-formation, where native word-formation processes are generally more robust. This is especially seen in compounding—for example, N1 + N2 combinations are still very powerful and productive.

Secondly, Japanese manifests a very strong tie between native and Sino-Japanese roots ensured by the existence of Chinese characters functioning as mediators. We shall remember that the users of Japanese need to develop various sorts of paradigms provided by the existence of Chinese characters. Nevertheless, we must not forget that the development of paradigms is achieved at enormous educational cost. Indeed, a large part of Japanese education is sacrificed to the development of such paradigms by connecting various totally unrelated readings. In the case of English, on the other hand, learners can be relatively free from the burden of acquiring Latinate vocabulary. However, we should note that this knowledge can function as a social divider, as it were. Thus, the basic rule is something like this: if you want to enter a university, or a postgraduate school, you should learn Latinate vocabulary; otherwise, you do not need it.

Thirdly, and even more strikingly, Japanese sometimes allows the cases in which even no remote semantic relations between two readings are possible. The extreme cases are the use of *ateji* (当て字), or 'substitute characters', often shown by the use of what is called *rubi* (ルビ), very small *kana* letters printed alongside of Chinese characters.[160] These small letters show how the Chinese characters should be read in each example:

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[160] The word *rubi* is originally from English word *ruby* meaning '[a] size of type, intermediate between nonpareil and pearl.' (OED **ruby** *n.* 7.) It functions as a sort of metalinguistic suprasegmental annotation letter system. Note that although the use of *rubi* may not be central in Japanese writing system, it is surely an integral part of the Japanese printing system.

(5.9) a. 貴方(あなた) (*rubi*: あなた 'you'; Chinese characters: 貴 'noble', 方 'person')

母親(おふくろ) (*rubi*: おふくろ 'mother'; Chinese characters: 母 'mother', 親 'parent')

b. 流石(さすが) (*rubi*: さすが 'worthy of'; Chinese characters: 流 'rolling', 石 'stone')

目出度(めでたし) (*rubi*: めでたし 'lucky'; 目 'eye', 出 'out', 度 'degree')

野暮(やぼ) (*rubi*: やぼ 'uncouth'; 野 'field', 暮 'nightfall, dusk')

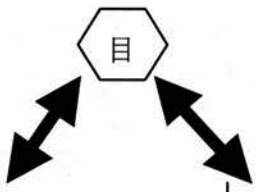
Note that there are still some semantic relations observable between the *rubi* readings and the Chinese characters in (5.9a). The examples of (5.9b), on the other hand, show that the *rubi* readings have nothing to do with the meanings expressed by the Chinese characters. Strikingly, to learn these readings is part of knowledge that 'fully-fledged' speakers of Japanese have to acquire; it is such ordinary knowledge that normal adult speakers of Japanese would have no problem in reading them without the aid of *rubi*! This testifies to the discussions we have made above: The users of Japanese have to develop various special paradigms based on the Chinese character system so that they are fully able to connect two readings that are not related either formally or semantically.

Let us see how this works in Japanese, taking 目出度 as an example. Its paradigm structure and the paradigms of the characters 目, 出, and 度 are shown below:

(5.10) a. CHARACTERS:

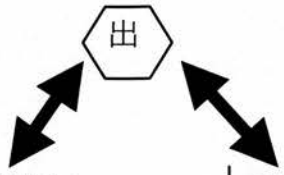
MORPHEME:	MEDETASHI	N/A
ALLOMORPHS:	MEDETAKU	
	MEDETASHI	
	MEDETAKE	
MEANINGS:	'lucky, congratulatory'	
	Native	Sino-Japanese

b. CHARACTER:



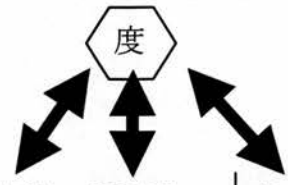
MORPHEME:	ME	MOKU
ALLOMORPHS:	ME	MOKU
	MA	MOK-
MEANINGS:	'eye'	'eye', 'insight', 'sight',
	'point'	'sight', 'outlook',
	'chief person'	'to watch', 'point',
	'index'	'reading', 'weight'
	'order (biological)'	
	'intention'	
	Native	Sino-Japanese

c. CHARACTER:



MORPHEME:	DE/IDE	SUI/SHUTSU
ALLOMORPHS:	(I)DE	SUI
	(I)DERU	SHUTSU
	(I)DERE	SHUT-
MEANINGS:	'to come out'	'to come out'
	'beginning'	'beginning'
	'origin'	'origin'
	'protruding point'	'excellence'
	'volume, time'	'pushiness'
	Native	Sino-Japanese

d. CHARACTER:

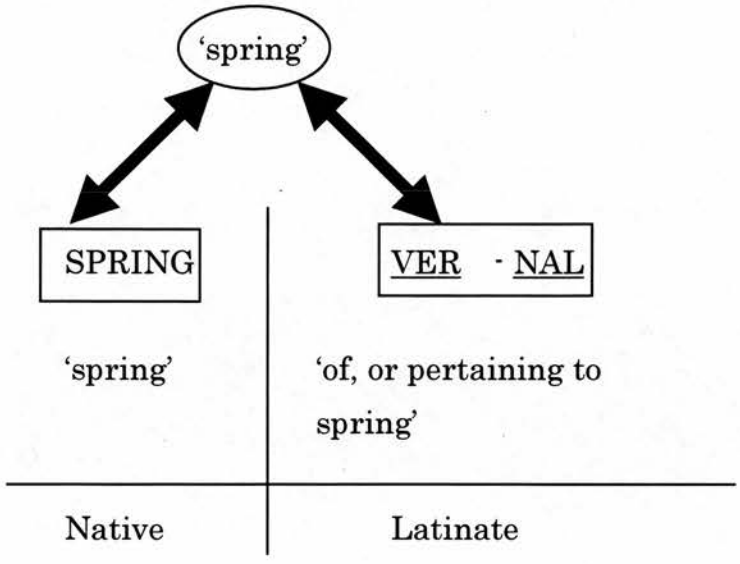


MORPHEME:	TABI YORI	DO/TAKU
ALLOMORPHS:	TABI YORI	DO
	TASHI	TO
	TAI	TAKU
MEANINGS:	'occasion'	'degree'
	'degree'	'standard'
	'every time	'rule'
	(conjunction)'	'period'
	'round, time'	'personality'
		'necessary tool'
		'enlightenment
		(Buddhism)'
	Native	Sino-Japanese

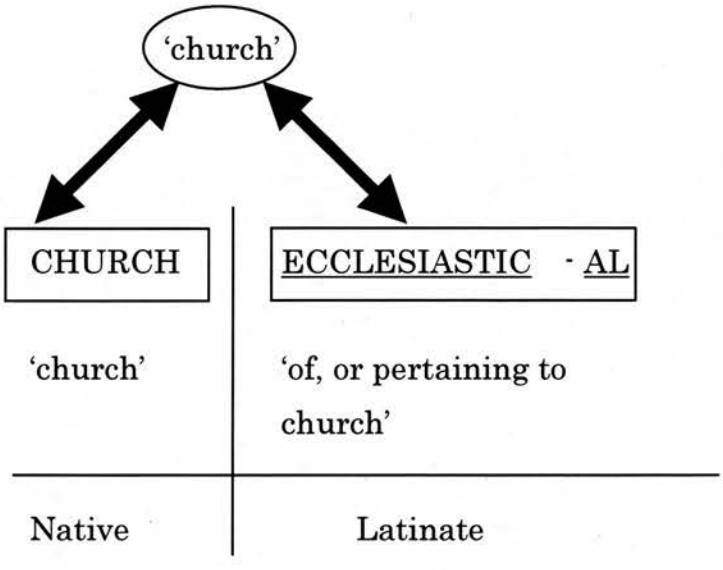
The examples in (5.10) clearly show that 目出度 is not compositionally made up of 目, 出, and 度.

Note that in English, we can see rather neat and very systematic paradigms observable between CAs and their BNs. See the *spring-vernal* and the *church-ecclesiastical* pairs:

(5.11) a.



b.



Actually, the paradigmaticity holding between CAs and their BNs is based on very systematic correspondences between forms and meanings. Two points should be worth mentioning concerning this rather systematic meaning-based paradigmaticity held between CAs and their BNs. Firstly, the meanings that CAs have in relation to their BNs are always constant—i.e. of the pattern, 'of, or pertaining to ...', which makes this special paradigmaticity look very systematic. Secondly, though MEANINGS 'spring' and 'church' presented in the ovals in (5.11a, b) are presented as MEANINGS, their real nature should better be understood as 'weak referentiality' of the BNs. Therefore, in English, this

meaning-based paradigmaticity—or, in fact, pseudo-paradigmaticity defined in Chapter 3—should accurately be regarded as 'weak-referentiality-based' paradigmaticity. As to this reasoning, we should remember that following the lead of Baker (2003), the noun is characterised as the bearer of a referential index. (See the relevant discussions in 3.2.5.)

Fourthly, there are some notable differences in the typological characteristics of languages involved in each case. In the case of English, the Latinate loanwords belong to Romance languages, whose morphological nature is highly fusional, whereas English itself used to be agglutinating in its basic morphology. When words are borrowed from a language whose morphology is predominantly fusional, one has to develop some morphological knowledge of the language in order to identify stems and affixes. This is precisely how English has developed Latinate morphology in its derivational morphology. (We have seen its general schema in 2.6.) Thus, just as Leisi (1974: 74) suggests, the knowledge of classical languages in English is of great importance to the speakers of English. Actually, this situation has caused English to become a kind of typological mixture of (a) weakly inflecting inflection, (b) strongly fusional derivational morphology in its large Latinate stratum, (c) agglutinating Germanic morphology, and (d) polysynthetic aspects of compounding, as Dressler (1985b: 343) observes.

In the case of Japanese, on the other hand, loanwords belong to Chinese whose morphology is predominantly isolating in nature. When the Japanese borrow words from Chinese, they do not have to have a good knowledge of Chinese morphology because, as an isolating language, Chinese does not have a complicated morphological component. Therefore, it probably is rather easy for speakers of Japanese to apply two different series of readings to a single grapheme.

Finally, English is very special in that its linguistic development has been

kept largely free from intervention by the authorities. This is remarkable because other European countries generally have Academies to standardise their languages. In the case of Japanese, we have something similar to the Academy, which is the Japanese Language Council (JLC). Note that even the number of Chinese characters to be learned in schools is determined on the basis of the report submitted by this organisation.[161]

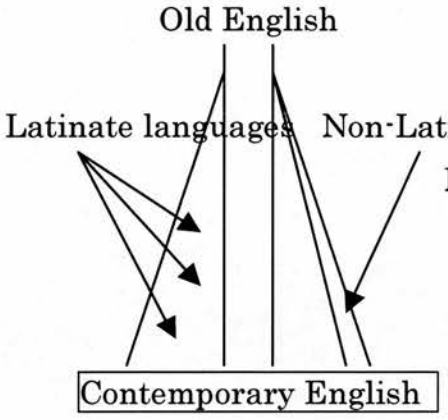
5.3.3. Similarities Between Japanese and English

Although the differences we have seen above are remarkable, we should note that there are at least four similarities between Japanese and English.

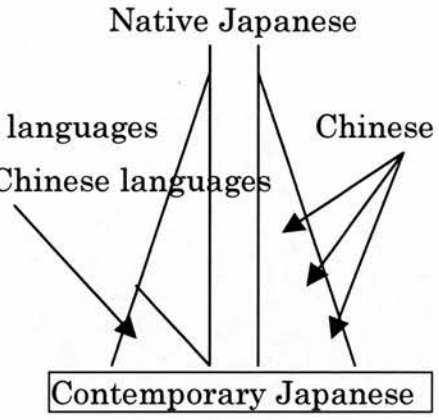
Firstly, I would like to point out that both languages are tolerant of absorbing loanwords in general. As to Japanese, Chinese loanwords are expressed by Chinese characters, while non-Chinese loanwords are represented by *katakana*-syllabary. Native words are represented by *hiragana*-syllabary, but they are also expressed by Chinese characters (in this case, they get native readings although they are represented by Chinese characters). In the case of English, the literature on the mixed nature of its native and Latinate vocabularies is simply boundless. Note that Kajima (1976: 196) once draws the following diagrams to capture the similarities of the lexes of both languages:

[161] The JLC report submitted in 1981 selects the total number of 1945 Chinese characters as 'Chinese Characters Designated for Daily Use'.

(5.12) a. English



b. Japanese



(Kajima, 1976: 196, [translation mine])

I think that the similarity observed in (5.12a) and (5.12b) partially explains why English literature can be translated into Japanese without damaging much of its original flavour.[162]

Secondly, in terms of morphological typology, both languages tend to develop characteristics of agglutinative languages. It is well known that Japanese is classified as an agglutinative language; but the tendency toward agglutination is surely observed in the case of English as well. We have seen in 2.6.1 and 2.6.2 that Latinate morphology is one of the two exceptions to the general trend of English morphology because it is still predominantly stem-based. However, even in the Latinate morphology, some shift to word-based morphology is arguably under way—as witness the following examples from Goldsmith (1990: 261):

(5.13) catholi[k]ism, ?Buddha-ism, ??commune-ism, Indiana-ism, Indian-ism

Note that here, the suffix *-ism* means 'particular ways of speech' (not 'philosophy, in a broad sense'), and the word-formation is completely

[162] The well-known conversation between Wamba and the swineherd in Walter Scott's *Ivanhoe*, and that famous Shakespearean phrase, 'the multitudinous seas incarnadine' (*Macbeth* 2:2), or even William Faulkner's modern novels cause no problem when they are translated into Japanese. See Koshiishi (2007) for various problems relating to translation and CAs.

word-based.[163] A similar shift is observed in *-ise* suffixation. We have new formations such as *condoise*, *Judaise*, *dockise*, etc. with open junctures as well as *criticise*, *mysticise*, etc. with close junctures. This can be considered a shift from fusional to agglutinative type of morphology because a certain meaning element is abstracted and agglutinated to the word.[164] Alternatively, from the point of view of Natural Morphology, it can be a natural shift to increase both diagrammaticality and morphotactic transparency of lexemes.

Thirdly, as to the category adjective, both English and Japanese share a rather impoverished nature of native adjective-forming word-formation. As to English, Lieber (2005: 413) remarks that by far the majority of them are of Latinate origin, which implies that those of native origin are small in number. With regard to Japanese, Yanagida (1969: 358ff.), Inoue (1981: 11ff.) make exactly the same observation.

Especially interesting are the remarks made by Inoue. He quotes Yanagida's remark that Japanese suffers from 'the famine of the adjective' (1969: 360; originally, '*keiyoshi-no kikin*') as it were. Inoue attributes this 'famine' to the wholesale borrowing of names and nouns which started in the opening of Japan in the middle of nineteenth century. 'There have never been enough borrowings of adjectives and verbs which matched that of nouns in number,' (Inoue, 1981: 11; translation mine) he continues to observe. In order to survive this linguistic famine, Japanese have resorted to the following three measures: (A) The direct introduction of foreign adjectives into Japanese, transcribing them into Japanese *katakana*-syllabary with adjective-forming -な(-NA) suffixed—witness such examples as エキゾチックな (EKIZOCHIKKU-NA, 'exotic'), スノビッシュな (SUNOBISSHU-NA, 'snobbish'), among others; (B) The use of

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[163] We even see *ism* used as an independent word (e.g. *Formalism, by being an 'ism' kills form by hugging it to death*[.] (AHD)).

[164] This might sound preposterous, but Hashimoto, ed. (1980: 286-308) once discussed the possibility of transplanting Chinese characters into European languages. Interestingly, we sometimes see *Xing* for '(pedestrian) crossing', and *E-mail* for 'electronic mail', in which the use of *X* and *E* can be regarded as something very close to the usage of Chinese characters in Japanese.

two-character combinations of Chinese Characters plus adjective-forming suffix -な (-NA)—as is witnessed by 静寂な (SEIJAKU-NA, 'quiet'), 優雅な (YUHGA-NA, 'graceful'), among others; and (C) the use of two-character combinations of Chinese characters plus adjective-forming suffix of Chinese origin -的 (-TEKI)—witness 絶対-的 (ZETTAI-TEKI, 'absolute'), 圧倒-的 (ATTOH-TEKI, 'overwhelming'), among others. The difference in sources and in suffixes apart, the above three measures are all conceived as subtypes of the general processes of lexeme borrowing—that is, Japanese have resorted to the borrowing of the foreign lexemes to solve the 'adjective famine'.

Indeed, the same thing can be said about English, which has a long history of borrowing lexemes from the Continent. One difference, however, is that the source languages such as French, Latin, Greek, etc. are so-called fusional languages. Therefore, English has introduced them as wholes—i.e. as morphologically unanalysable lexemes. However, as the time goes by and the number of such morphologically unanalysable lexemes increases, English-speaking people start to analyse them morphologically based on abduction, as has been shown in 2.6.2.

So, what has happened to native adjective-forming word formation? Interestingly, here we can recognise the parallelism between English and Japanese again. Firstly, native adjective-forming suffixes are mainly used ascriptively and often evaluatively. In the case of English, this is a very rough role division, but the general trend is: native word formation is in charge of the formation of ascriptive, so-called *bona fide* qualitative adjectives (QAdjs), which are evaluative by default, whereas Latinate word formation is in charge of the formation of 'attributive-only' relational adjectives (RAdjs), which typically lack evaluative meanings. I am not going into diachronic details, but I suspect that this is because many of the native adjective-forming suffixes used to be independent words which have made rather concrete semantic contributions to the target adjectives. Such suffixes as *-ly* (< *līc*, 'appearance, form, body'), *-less* (< *lēas*, 'devoid

(of), free (from)'), *-ful* (< *full*, 'full (of), having'), *-like* (< *like*, 'like'), *-some* (< *-sum*, 'one') used to have the status of independent words. As to the semantic (contentful) contribution of the native suffix, Baker's (2003: 231ff.) analysis of the deadjectival adverb-forming suffix *-ly* may give us some hint. Following the lead of Déchaine and Tremblay (1996), he analyses it as a noun having its own referentiality, meaning something like 'manner' so that *quickly* can be analysed as 'quick + manner'. I think that the same thing can be applied to the above native adjective—i.e. for example, *friendly* is analysed as 'friend + manner', *cloudless* is analysed as 'cloud-free'.

The contribution of Latinate suffixes such as *-al*, *-ar*, *-ine*, *-ic*, *-ous*, and *-ant* to the resulting adjectives, on the other hand, are more modest and abstract. They can be regarded as category transposers with no concrete semantic contribution to their bases. Thus, many of them are RAdjs meaning 'of, or pertaining to ...'. Presumably, one of the reasons for their abstract semantic contribution is that they result from human abduction. They were not meaningful elements in the past; they came into being because of human reanalysis or reinterpretation. That is why they are more like functional operators rather than meaningful elements.

Interestingly, the situation is more or less the same in Japanese. Native adjective-forming suffixes such as *-SHII* and *-I* are almost always ascriptive and evaluative, whereas the Sino-Japanese adjective-forming suffix -的-な (TEKI-NA) is not. Shigeo Yuasa (personal communication) points out that adjective in *-SHII* or *-I* is no longer productive.[165] Interestingly, to make amends for this impoverished nature of native QAdjs in general, we often see Sino-Japanese RAdjs undergoing semantic shift to become QAdjs, just as English RAdjs are often found to have undergone such a shift. See the following examples:

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[165] According to Shigeo Yuasa (personal communication), among the recently-formed adjectives ending in -I in Japanese are such adjectives as エロい (ERO-I, 'obscene, pornographic')', ナウい (NAU-I, 'fashionable, stylish'), きもい, きしょい (KIMO-I, KISHO-I; 'creepy, weird), which are usually regarded either as obsolete or as a little too vulgar.

(5.14) a. 美-的-な BI-TEKI-NA
- RAdj meaning 'of, or pertaining to beauty';
- QAdj meaning 'beautiful'

b. 倫理-的-な RINRI-TEKI-NA
- RAdj meaning 'of, or pertaining to ethics'
- QAdj meaning 'correct in terms of ethics'

The above discussions have shown that a similar adjective-forming word formation is observed in both English and Japanese.

Finally, both in English and Japanese, there are certain loanwords which are considered to be completely naturalised into these languages. With regard to English, semantic shift as we have seen in 3.3.3 can be indicative of degree of naturalisation. We have seen such adjectives as *orthogonal* ('mutually independent'), *insular* ('interested in your own group, country, way of life etc and no others—used to show disapproval' (LDOCE4)), among others which are now regarded as QAdjs, rather than RAdjs, which means that they have acquired some sort of evaluative meanings and are now completely naturalised into the English language.

The same conclusion can be reached if you see such examples as 犯罪-的-な (HANZAI ('crime') -TEKI-NA ('of, or pertaining to'); thus, the whole expression literally translated as 'of, or pertaining to crime'), 美-的-な (BI 'beauty' -TEKI-NA 'of, or pertaining to'; thus, the whole expression being literally translated as 'of, or pertaining to beauty'), etc. have become QAdjs and are now considered to have acquired evaluative meanings. 犯罪-的-な and 美-的-な are now used to mean 'morally wrong' and 'beautiful' respectively. This is proven by the fact that both expressions can be preceded by such degree adverbs as とても (TOTEMO 'very') and 非常に (HIJO-NI 'exceedingly').

Also, interestingly enough, in Japanese, some Chinese characters have

developed special native meanings which cannot be traced back in Chinese. For example, 局 (TSUBONE, originally meaning 'a small compartment or room for maids of honour in the palace') has acquired the meaning of 'maids of honours serving the shogun', or even 'an old maid'[166]. This shows how this Chinese character has been completely naturalised into Japanese.

5.4. Summary

In this chapter, our main topics revolve around the notion of Latinateness of CAs. We have discussed CAs' sociolinguistic and stylistic properties and have conducted contrastive studies between English and Japanese. I would like to summarise our discussions in what follows:

Firstly, we have seen that CAs' Latinateness leads to their sociolinguistic or stylistic characterisation as 'hard words' (Leisi, 1974: 55) in the English lexis. N1s and POSSs, in contrast, are 'easy words' in a manner of speaking and they do not belong to the sociolinguistically higher stratum. In the case of N1s and POSSs, the whole NPs are the amalgamations of two free morphemes agglutinatively combined. In case of CA + N combinations, however, the semantic relation between the head noun and the stem of CAs presupposes the morphological analysability of CAs in the speech community. Therefore, speakers of English must develop a good amount of morphological knowledge of classical languages in order to be qualified as full-fledged, sophisticated persons. This morphological knowledge on the part of speakers of English bears a sociolinguistic class-dividing function in English-speaking society, just as pointed out by such scholars as Leisi (1974: 67ff.), Grove (1949), Corson (1985), and Cummins (2001).

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[166] Takenobu Fukushima has brought this to my attention (personal communication). Incidentally, we often see this character in the form of お局様 (O-[honorary prefix] TSUBONE-SAMA [honorary suffix]) to mean 'a career woman who has never married and is not young any more'. (Here, honorary affixes O- and -SAMA enhance the ironical tone of the whole expression.)

Secondly, we have conducted contrastive studies between English and Japanese. In the case of English, the stems of CAs and their BNs are associated by the notion of suppletion defined by the meaning-based pseudo-paradigmaticity discussed in 2.5.4.2.1. Note that what ensures this pseudo-paradigmaticity is the existence of constant, uniform semantic relation (i.e. 'of, or relating to ...') between the stem of CAs and their BNs. In order for loanwords which are fusional in nature to be analysed morphologically, speakers of English must have certain knowledge of Latinate morphology. In the case of Japanese, on the other hand, thanks to the existence of Chinese characters, its literacy tradition, and its highly demanding compulsory education, both native and Sino-Japanese series of readings are associated with each other. Note that such association is only possible by the support of grapheme-based paradigmaticity which is absolutely unique to the Japanese language. Though there are several notable differences between English and Japanese, Morioka's (2002) 'graphomorphemic' analysis of Chinese characters in Japanese seems to me to strongly suggest the applicability of the same line of argument to CAs in English as well.

Chapter 6
Summary and Conclusions

6.1. Summary

The primary purpose of this thesis has been to study various topics related to CAs. It has been shown that the CAs pose many interesting problems for various subfields of language studies ranging from morphology, syntax, semantics, historical linguistics, lexicography, sociolinguistics, contrastive studies, to language typology.

In Chapter 1, relevant examples of CAs were introduced, drawn from ORD1. After that, CAs were defined as 'Latinate suppletive relational adjectives'. It was shown that although they have drawn some scholars' attention, they are relatively poorly studied. We have explained that the inventor of the term CA is Thomas Pyles and also pointed out the fact that in the 1950s, the dictionaries published by Funk and Wagnalls used to use the term, but not any longer.

Also in Chapter 1, the general architecture of the thesis was shown, according to the following three aspects of the definition of CAs: (a) 'Latinateness', which leads to the studies in Chapter 5, sociolinguistics and contrastive studies on CAs), (b) 'suppletiveness', which leads to the studies in Chapter 2, morphological studies on CAs, and (c) 'RAdj-hood', which leads to the studies in Chapter 3, syntax and semantics of CAs. It was shown that we have another chapter on CAs' treatment in dictionaries, which is the topic of Chapter 4.

Chapter 2 revolved around the 'suppletiveness' of CAs. In this chapter, our main topics were about how CAs can be analysed morphologically. It was clearly shown that a simple form-based approach does not work and that some sort of meaning-driven approach is essential if CAs are to be accommodated in derivational morphology in English. Since a robust meaning-based approach has to be based on a solid theoretical ground,

the hierarchy of paradigmaticity was proposed on the basis of Cruse's (1984: 118-119) 'proportional series' in order to give the basis for the particular paradigmaticity between relational adjectives and their corresponding base nouns. We have seen that this particular paradigmaticity is well supported by the existence of the *of*-PP and the possessive in English and thus, this particular case of alleged derivational suppletion is shown to have 'quasi-inflectional', across-the-board applicability. Hence, it was concluded that collateral adjectives and their base nouns are morphologically related—i.e. collateral adjectives are derivatives of their base nouns— and that the relationship between them is 'suppletive' (2.5).

We closed Chapter 2 by reviewing the history of English morphology (2.6). All CAs were analysed to have the morphological composition of the type 'extreme stem allomorphy + denominal adjective-forming suffix'. It was shown that English morphology is said to have undergone a general transition from root-based morphology to word-based morphology, through the stage of stem-based morphology. The Latinate vocabulary was shown to constitute an island of such a trend and still to be predominantly stem-based. It was also shown that such words belonging to this vocabulary as CAs resulted basically from some sort of abduction-based morphological analysis of foreign words in general.

The syntax and semantics of RAdjs were researched in Chapter 3. Note that CAs constitute a proper subset of RAdjs. In this chapter, it was shown that the alleged 'nounlike' nature of RAdjs is ascribed to their intrinsic referential properties. Through various comparisons with N1s, POSS, and *of*-PPs in 3.2.5.4, we concluded that RAdjs, as well as N1s and the 'descriptive' use of POSSs, have week, 'type-indicating' type of referentiality, whereas POSSs and *of*-PPs have strong, 'token-identifying' referentiality, which results in the various 'nounlike' syntactic and semantic properties. It was also concluded that this referentiality causes RAdjs to be semantically very 'nounlike' in spite of their formally

displaying various adjectival characteristics (3.2.5).

As to attribution, we have seen that the analysis based on Bare Phrase Structure explains the 'noncompositionality' or 'plasticity' of adjectives. (3.2.4)

With regard to the semantics of attribution, we have seen that, some sort of sublexical decompositional lexical-semantic analysis (e.g. Beard's (1991) or Lieber's (2002)) is essential for its semantic analysis.

Finally in Chapter 3, it was observed that many RAdjs undergo semantic shift to become QAdjs. We have seen that this semantic shift can be considered a general trend for a marked subgroup of a category (i.e. RAdjs, in this case) to become an unmarked one (i.e. QAdjs). It was also shown that English has particularly small reservoir for basic, evaluative QAdjs, which are basically of native origin and that in order to make amends for this weakness, RAdjs, which are predominantly Latinate, are considered to undergo semantic shift to become QAdjs (3.3.3).

Chapter 4 was a chapter on lexicographic considerations. After discussing the general topic of how morphology is treated in dictionaries (4.2), a review was presented to show general characteristics of semasiological and onomasiological dictionaries. In 4.4, several surveys were conducted to show the actual treatment of CAs in both semasiological and onomasiological dictionaries. It was shown that there is a general indifference among the semasiological dictionaries to CAs' microstructural treatment. CED and some English-Japanese dictionaries published in Japan were considered to constitute an exceptional group in semasiological dictionaries. On the other hand, in the camp of onomasiological dictionaries, it was shown that they tend to contain too many CAs, some of which are too technical for the average dictionary user to understand (4.5). It was concluded that at least intermediate-level and upper-level semasiological dictionaries should

contain onomasiological information concerning CAs and the best way to treat them is in the microstructures of their BNs, preferably with some appropriate cross-referencing device. In addition, we have seen that information concerning CAs, such as the one related to attributive-only-ness, or semantic shifts, is difficult to present in onomasiological dictionaries, so the microstructure of semasiological dictionaries should be appropriately revised to accommodate such information.

Chapter 5 was composed of two mutually related studies revolving around the notion of 'Latinateness'. First, in 5.2, it was shown that the Latinate vocabulary is composed of those words which are often referred to as 'hard words' from sociolinguistic points of view. It was shown that in CA + N combinations, the semantic relation between the head noun and the stem of CAs presupposes the morphological analysability of CAs in the speech community, the knowledge of which on the part of the speakers can function as a sociolinguistic class divider in the English-speaking world. We have seen that in order to develop such knowledge, English-speaking people must have a certain knowledge of classical languages, which leads to the proliferation of reference books, word-power-expanding books, etc. as well as word games, crossword puzzles and so on.

In 5.3, we have conducted contrastive studies between English and Japanese, which is also known to have more than one vocabulary stratum. After introducing the multilayered vocabulary structures of Japanese, it was revealed that grapheme-based paradigmaticity (i.e. 'graphomorphemics' in Morioka's (2004: 31) terminology) combines the native and the Sino-Japanese vocabulary strata in Japanese. Several similarities and differences between English and Japanese were researched, through the process of which it was shown that the meaning-driven paradigmaticity between CAs and their BNs is hard to come by without the proper knowledge of classical languages in the English-speaking world.

6.2. Implications of the Present Study

In Chapter 1, it was pointed out that although there have been a handful of scholars who are interested in the problems concerning CAs, their detailed nature has been rather underinvestigated. Moreover, in Chapter 2, we have seen that CAs' significance in English morphology had been almost totally ignored until Levi's book (1978) was published. The same can be said of the notion of suppletion in morphological theory, the main reason for which, we have found, to be traced back to the predominance of form-centred view in linguistic theory. Especially prevailing in terms of this is the never-hitherto-proven belief that the lexemes which are formally unrelated to others can never be morphologically derivatives of each other. It is highly probable that this way of thinking comes from the view that morphology can basically be reduced to the combination of morphemes.

However, as has been presented in the present thesis, it is evident that the CAs in English pose serious problems to such a form-centred view. Their existence in the English lexis strongly suggests the possibility of the alternative, meaning-based view. However, although I have tried to shed light on various interesting topics related to CAs, to disentangle facts, and to provide solutions to the problems raised by them, still, many topics remain to be solved in the future.

The following can be considered such topics for possible future research:

- Revising of the notion of suppletion defined in Chapter 2.
  Although the basic line of approach is on the right track, the one I proposed in Chapter 2 is still crude in nature. It waits to be replaced by a more sophisticated one. A new direction of studies on lexical componential analysis, lexical-semantic studies such as Beard (1991) and Lieber (2004) can be good candidates for this line of future research.

- Researching the cognitive interpretation of the semantic shift of RAdjs. We have seen in Chapter 3 that many RAdjs undergo semantic shift and become QAdjs. The direction of this semantic change is considered a change from the concrete to the abstract because though RAdjs originally have referentiality, when they undergo semantic shift to become QAdjs, their referentiality is weakened and replaced by evaluativeness. Actually, this change can be expressed in the following schema:

(6.1) General change scheme from the concrete to the abstract

Being concrete ——————————▶ Being abstract

Token-identifying > Type-indicating > Value-judging

Some sort of cognitive explanation is probably possible for this general change scheme, which suggests a direction for future research.

- Researching the notion of users in the lexicographic study of CAs. In Chapter 4, we have mentioned the frequently cited remark of Wiegand's (1977: 59) that dictionary users are the 'familiar strangers', or 'known unknown'. In footnote 146, I tentatively conclude that for the users of 'the level 5 onwards' set up by Aizawa and Murata, eds. (2005), lexicographic information about CAs is of some importance. However, more thorough research is obviously essential for this kind of level setting of the dictionary user. Also importantly, this kind of user research must also be conducted to show native speakers' lexical knowledge development.

- Seeking other languages which have more than one vocabulary layer and conducting a contrastive linguistic research. In 2.6.3, we have seen Dressler's observation that Present-Day English displays 'a very weird typological mix in morphology'. Note that as one of

Germanic languages, the basic pattern of English morphology is that of agglutinating, but the Latinate vocabulary is highly fusional, which has contributed to the formal unrelatedness between CAs and their BNs. In the case of Japanese, it was concluded in 5.4 that the isolating nature of Chinese makes the analysability of the loanwords comparatively so easy that the relationship between native and the Sino-Japanese readings is kept visibly related. Note that there is also another important factor for this enhancement of relational visibility; namely, the existence of shared graphemes—i.e. Chinese characters. What about in other languages which have more than one vocabulary stratum? This can undoubtedly be an interesting topic to pursue.

Linguistics is still overwhelmingly form-based. Part of this reason can be ascribed to the lack of the rigid framework under which research should be done, or the fuzziness of the semantic descriptions in general. This, however, never means the precedence of the form-based studies. CAs are a case in point. Their formal unrelatability to their BNs never means that they should be treated completely isolated from their BNs.

Some 25 years ago, in one of the undergraduate classrooms in Tokyo, a boy was asked what the 'adjective of the word *spring*' was. He could not answer and the answer given by the lecturer was *vernal*; and since that time, he has always wondered why English does not have something similar to Chinese characters to connect these two words.

I was that boy. I have therefore tried to do my best to present what I believe to be a full discussion of the questions naturally raised in the course of the present enquiry concerning such adjectives.

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